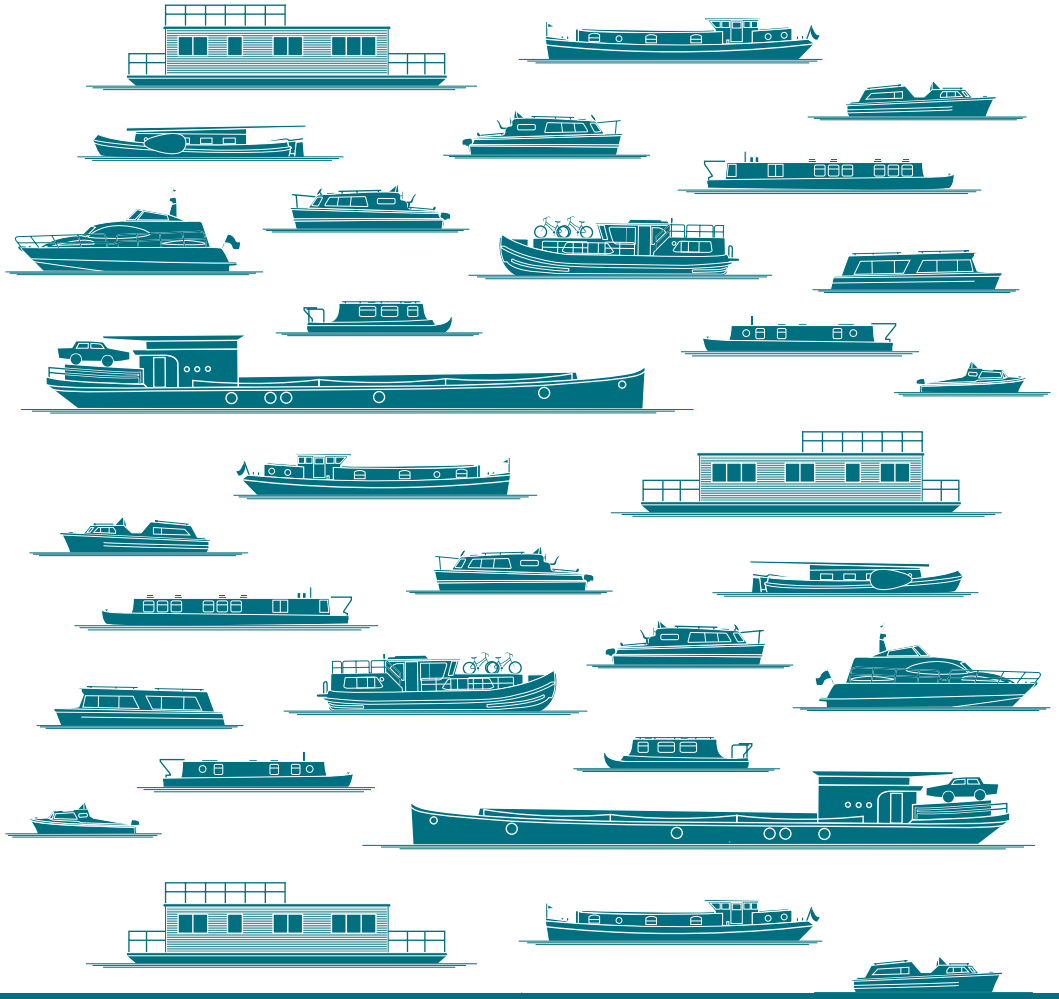
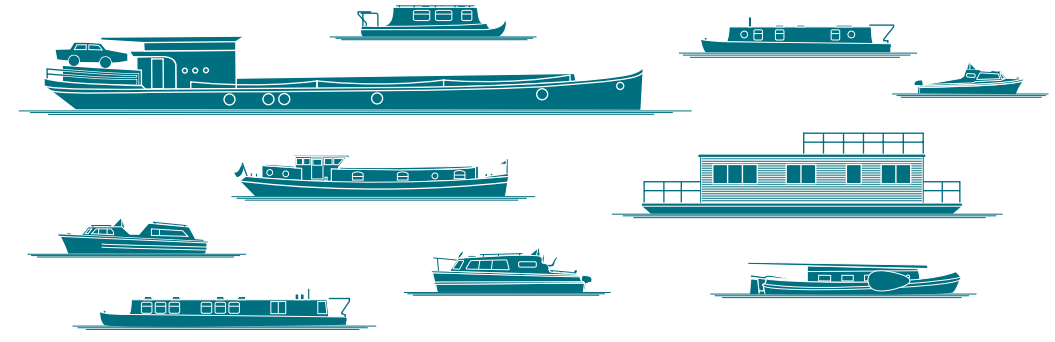


Designing Houseboats for Italian Inland Waterways

Analysis of European Case Studies Related to the Development of Houseboating in Italy



Designing Houseboats for Italian Inland Waterways

Analysis of European Case Studies
Related to the Development of Houseboating in Italy

Università degli Studi di Genova
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I barconi risalgono adagio, sospinti e pesanti:
quasi immobili, fanno schiumare la viva corrente.
E già quasi notte: Isolati, si fermano:
si dibatte e sussulta la vanga sott'acqua.
D'ora in ora, altre barche sono state fin qui.
I barconi nel buio discendono grevi di sabbia,
senza dare una scossa, radenti: ogni uomo è seduto
a una punta e un granello di fuoco gli brucia alla bocca
Ogni paio di braccia strascina il suo remo,
un tepore discende alle gambe fiaccate
e lontano s'accendono i lumi.
...In distanza, sul fiume, scintillano i lumi
di Torino. Due o tre sabbiatori hanno acceso
sulla prua il fanale, ma il fiume è deserto.

Cesare Pavese
Crepuscolo di sabbiatori del Po in una casa in cima a una collina

This research is based on houseboats and the houseboating phenomenon mainly studied by the point of view of Yacht Design. The main aim of this research was to give a 360° view on houseboating in Europe, showing how historical and geographical different backgrounds gave birth to different models of working boats that at different moments were converted into accommodations, nowadays part of their own landscape.

Houseboating is a niche reality.
Academic literature is not enough to explain this complex phenomenon as it is nowadays. Indeed, not only houseboating is relatively recent but also it is still spreading around Europe and evolving. This is why the research methods are a combination of documentary sources – such as press articles, forums on dedicated websites, annual reports of the main agencies about inland navigation, statements collected after conferences, meetings and surveys made by the associations of houseboaters – and field observations based on interviews. The results of this data collection are the main actor's portrayal and the definition of the current scenario, giving shape to a possible near future.

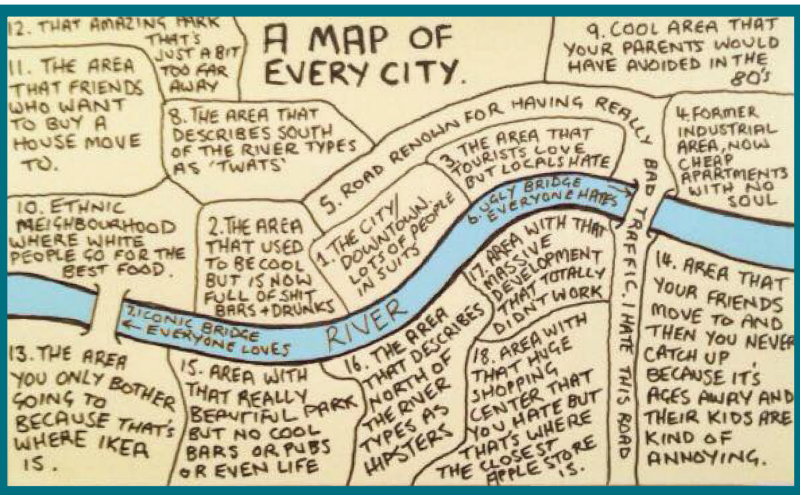
The language was a big obstacle for this research since most of the literature and internet sources are not translated into English. Thus, except for the British and American materials on this topic, all the other information remains written in their mother languages (mainly French, Dutch and German), creating a big fracture in the possible confrontation between different European realities.

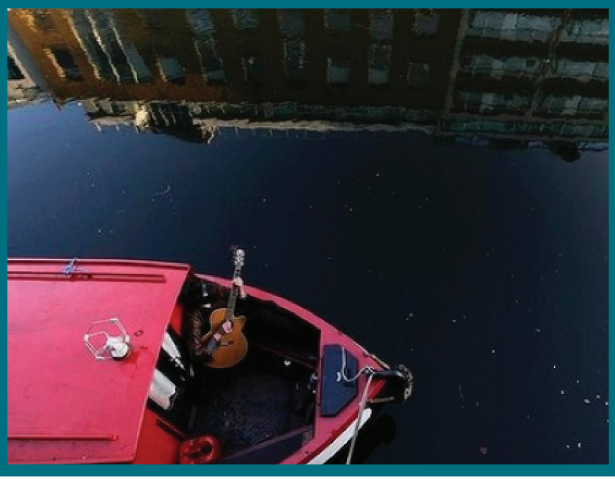
The research is organized as follows.
First of all, I believed it was necessary to set the background of this topic, putting together all the relevant literature (when present).
The work begins with a clear definition of the term 'houseboat' and a description of its main users and its history around the European

continent.
Secondly, the kind of boats mainly involved in this phenomenon havebeen described, showing their regional vocation and how their different features influenced different users in different geographical areas.
After this necessary introduction, the houseboating phenomenon has been investigated from the point of view of a new dwelling as well as the protagonist of diverse forms of tourism, better defined by the French as "*tourism fluvestre*"[1].
Once the background was completed, the focus shifted to Italy, a country struggling to affirm inland navigation not only in terms of freight-carry but fluvial tourism. The state of art of this country has been portrayed, understanding its potentials and the limits that are arresting its promising development. The few isolated examples of life afloat have been showcased. Going through the end of the work, European best practises are compared to the Italian situation, with the objective to portray its limits and future potentials.

F.1
Thesis' moodboard

1 It is a form of integrated tourism, sharing the same values of slow tourism. The term "*fluvestre*" is a French neologism made by the words fluvial (riverine/fluvial) and *"terrestre"* (landbased).


A MAP OF EVERY CITY.
12. THAT AMAZING PARK THAT'S JUST A BIT TOO FAR AWAY
11. THE AREA THAT FRIENDS WHO WANT TO BUY A HOUSE MOVE TO.
8. THE AREA THAT DESCRIBES SOUTH OF THE RIVER TYPES AS 'TWATS'
9. COOL AREA THAT YOUR PARENTS WOULD HAVE AVOIDED IN THE 80'S
5. ROAD RENOWN FOR HAVING REALLY BAD TRAFFIC. I HATE THIS ROAD
3. THE AREA THAT TOURISTS LOVE BUT LOCALS HATE
4. FORMER INDUSTRIAL AREA, NOW CHEAP APARTMENTS WITH NO SOUL
10. ETHNIC NEIGHBOURHOOD WHERE WHITE PEOPLE GO FOR THE BEST FOOD.
2. THE AREA THAT USED TO BE COOL BUT IS NOW FULL OF SHIT BARS + DRUNKS
1. THE CITY/ DOWNTOWN. LOTS OF PEOPLE IN SUITS
6. UGLY BRIDGE EVERYONE HATES
17. AREA WITH THAT MASSIVE DEVELOPMENT THAT TOTALLY DIDN'T WORK
14. AREA THAT YOUR FRIENDS MOVE TO AND THEN YOU NEVER CATCH UP BECAUSE IT'S AGES AWAY AND THEIR KIDS ARE KIND OF ANNOYING.
7. ICONIC BRIDGE ← EVERYONE LOVES
RIVER
13. THE AREA YOU ONLY BOTHER GOING TO BECAUSE THAT'S WHERE IKEA IS.
15. AREA WITH THAT REALLY BEAUTIFUL PARK BUT NO COOL BARS OR PUBS OR EVEN LIFE
16. THE AREA THAT DESCRIBES NORTH OF THE RIVER TYPES AS HIPSTERS
18. AREA WITH THAT HUGE SHOPPING CENTER THAT YOU HATE BUT THAT'S WHERE THE CLOSEST APPLE STORE IS.



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1 _ Introduction to the topic: houseboating in Europe

Houseboating is mainly known as a popular recreational activity, that takes place all around the world, involving groups of people of all ages, aboard houseboats of all varieties and sizes. It is appealing due to the possibility it gives to explore the local landscape while remaining in proximity to any other activity offered on the land and to retain the potential to move the living quarters for a change of view.
Nowadays, houseboating is establishing itself as an alternative to traditional forms of a dwelling. In fact, it is a relatively recent sustainable housing trend that, since the last few decades, is redesigning the waterfront of the several cities around the world.
Living afloat dues its popularity to the idea of making the cost of housing more affordable. Investing in "floating estates" represents for many dwellers the only way to accomplish the need of owning a space called 'home', reaching a sense of achievement and freedom. Houseboating is also considered an interesting model of housing for 'degrowth'[2], contributing to rediscovering values such as the sense of belonging to a neighbourhood and the responsibility for their waterways, bringing back waterfronts to cities.

1.1 Houseboat definition

There are several definitions of 'houseboat' according to different dictionaries in different parts of the world.

The first definition that appears when typing on Google is: «a boat which is or can be moored for use as a dwelling» from the Oxford

2 'Degrowth', a type of 'postgrowth', that is becoming a strong political, practical and cultural movement for downscaling and transforming societies beyond capitalist growth and non-capitalist productivism to achieve global sustainability and satisfy everyone's basic needs.

Dictionary. This explanation says enough to understand the difference existing in comparison to other kinds of boats and it is vague enough to be valid at the same time for British and American speakers. However, some other dictionaries add some details to this first description. The Cambridge Dictionary, for instance, says: «a boat that people use as their home, often kept in one place on a river or canal». Similarly to the one of the Collins Dictionary[3], this definition identifies a specific area where houseboats are mainly located, at least in Europe, where most of the houseboats are docked on inland waterways. In fact, despite the authority of both dictionaries, it must be said that this kind of boats can actually be found on the seacoasts too. After a more general definition, the Collins dictionary adds two different descriptions, dividing them into British and American English. The British one states: «a stationary boat or barge used as a home» where 'stationary' seems to be a prime feature and it is actually like this according to the British laws. Meanwhile, the American one is: "a large, flat-bottomed boat with a superstructure resembling a house, usually moored and used as a residence".

F.2
Tiny House examples around the world

Houses are actually bigger in the USA, compared to the average size of European ones, and so houseboats must be bigger too, however, the adjective "large" is not exactly as decisive as it looks like in this phrase, especially nowadays with the spread of the Tiny House Movement[4].

3 "A houseboat is a small boat on a river or canal which people live in". https://www.collinsdictionary.com/dictionary/english/houseboat

4 In 1997 the architect and designer Sarah Susanka, wrote the book "The Not So Big House", that is considered a sort of manifesto of the 'small houses movement'. The movement is based on the value of quality materials and reduced volumes with essential design. In a few years this philosophy attracted

F.3
Houseboats in Amsterdam


THORNMARK

F.4
Typical converted Narrowboats

The general definition given by the same dictionary was contradictorily starting with "small boat" and it could have been more adequate if referred only to English houseboats that are mainly narrow boats[5] converted into accommodation.
Going on in the research, Dictionary.com gives a mixed description of the previous ones: «a flat-bottomed, barge-like boat fitted for use as a floating dwelling but not for rough water». As before, "flat-bottomed" and "barge" are referring to houseboats designed for inland navigation and it is excluding all of those born with a different design. Despite the kind of water in which the boat is supposed to navigate, this specific feature is relevant in terms of offering a bigger volume for the interiors in order to have all the necessary space to host amenities of a house on land.
The Merriam-Webster Dictionary gives a double –and more open explanation: «a boat fitted for use as a dwelling» and «especially: a pleasure craft with a broad beam, a usually shallow draft, and a large superstructure resembling a house». This second part of the explanation is actually referred to some specific kind of boats like, for instance, the French or the Dutch barges, nowadays refitted in order to be used as houseboats, thanks to their big volume that offers space for comfortable interiors. However, the word "usually" doesn't exclude other possibilities.

In the common language houseboats and floating homes are often used as synonymous but technically they're not the same thing. Indeed, a houseboat is supposed to be a boat even if primarily functioning as a home. 'Floating home', instead, refers to all the floating structures that host an accommodation on top, with or without the capability of moving on the water. While many people use the terms interchangeably, it must be noticed that houseboats may be considered as part of the floating homes' family but not the other way around.
Floating homes are more closely related to traditional real estate because the most of the them remain static and are moored to a fixed location in order to be tethered to land to provide utilities to benefit of all the comfort of a house build on the ground, such as running water, electricity and Internet.

more and more people. Jay Schafer is the co-founder of Tumbleweed Tiny House Company, the first company dedicated to Tiny Houses from the design to their construction. He claims that the key to living in a tiny home is smart design and attention to detail. Aesthetics aside, Schafer also believes that people can discover a sense of freedom in living with less, though at the base of the "less is more" lifestyle.

5 Narrow boats are the typical working boats used in the UK and they are never wider than 2.13 m (7 ft) while their maximum length is 21.95 m (72 ft). Anything wider or longer will be unable to navigate most of the British canal network. However, to access the entire network the maximum length is 17.37 m (57 ft).

The American and Canadian term for a house on a float (a raft) is "float house", while roughly built float houses may be called "shanty boats"[6] even if the "boat" side has often nothing really 'nautical'. In the age of "DIY", shanty boats are facing a new spate of success. However, nowadays, shanty boats can be considered as a niche into the American houseboating world, despite its fascinating history on American Rivers.

F.5
Examples of floating homes, Sausalito, California

In Europe, a similar trend is mainly diffused in Germany, where pontoon boats are the base where fancy superstructures are built. In German, a houseboat is mainly called "*Hausboot*"[7] or "*Wohnboot*"[8]; "*Wohnschiff*" can be used as a synonymous if its size is closer to a ship's ("*Schiff*") one[9]. Instead, "floating home" is translated with "*Schwimmhaus*".
Similarly to the German terms, 'houseboat' in Dutch is translated with '*woonboot*' or '*woonschip*', meaning "boat/ship for living", according to

F.6
A recent American shanty boat in Maine

F.7
A DIY floating home in Berlin

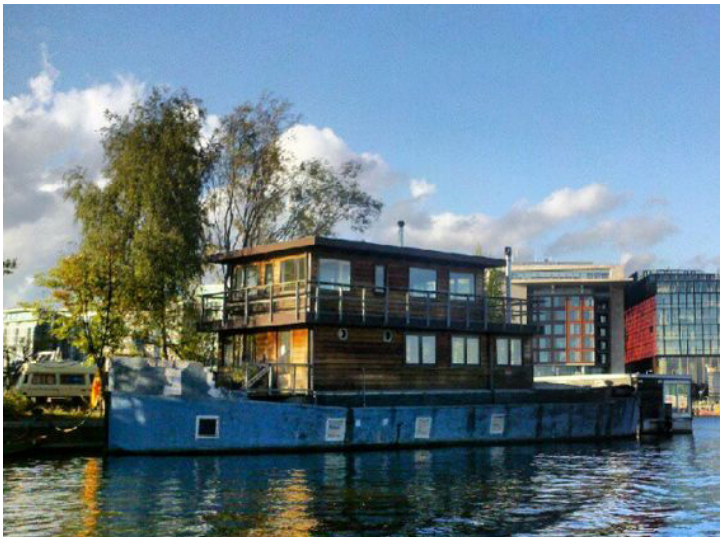
6 Shanty boats appeared for the first time during the XIX century, when thousands of families left their homes in the upper Mississippi Valley in favour of home-built floating rafts to look for work along the more industrialized lower Mississippi River and Ohio River Valleys. For almost a century, itinerant workers have lived in shanty boats along the canals and rivers of industrial American towns, before that river-based industry -and so the nearby floating neighbourhoods- disappeared. Families mainly moved on rivers because it represented a cost-free solution for the displaced people in rural areas and workers in urban ones. People went on simply living or travelling to look for a job, until the end of the 1929 Great Depression. During the 60s and 70s a new spate of liveaboards arrived but it ends a few years after. Recently, young middle-class artists, punks and anarchists, but also enthusiasts of the Tiny House Movement, have taken to the river in homemade shanty boats to float the Mississippi, Ohio, Missouri and other rivers. Despite this kind of activity is forbidden almost everywhere in the US, some of these itinerant communities of boat people still exist here and there.

7 '*Hausboote*', is plural.

8 '*Wohn*' means 'home' or it can be used as a verb meaning "to live".

9 A boat becomes a 'ship' when its LOA (length over all) is longer than 24 meters.

the fact that the 'house' has been built on the hull of a boat or on the ship's bigger one. However, this Dutch term is very specific since it refers only to old cargoship where the cargo bay was refurbished to provide an addition to the small captain's quarters at the back of the ship. The vast majority of these ships were built at the beginning of the XX century, mostly out of steel or iron.
When the original hull has been heavily modified to the point that it can't be qualified as a boat anymore, the word *"woonvartuig"* is the right one to use. It can be translated as "vessel for living" and it is used by the city of Amsterdam to describe houseboats that are built on the hull of an old ship where the original steering house and deck layout was completely removed to make room for a superstructure only meant to live in.



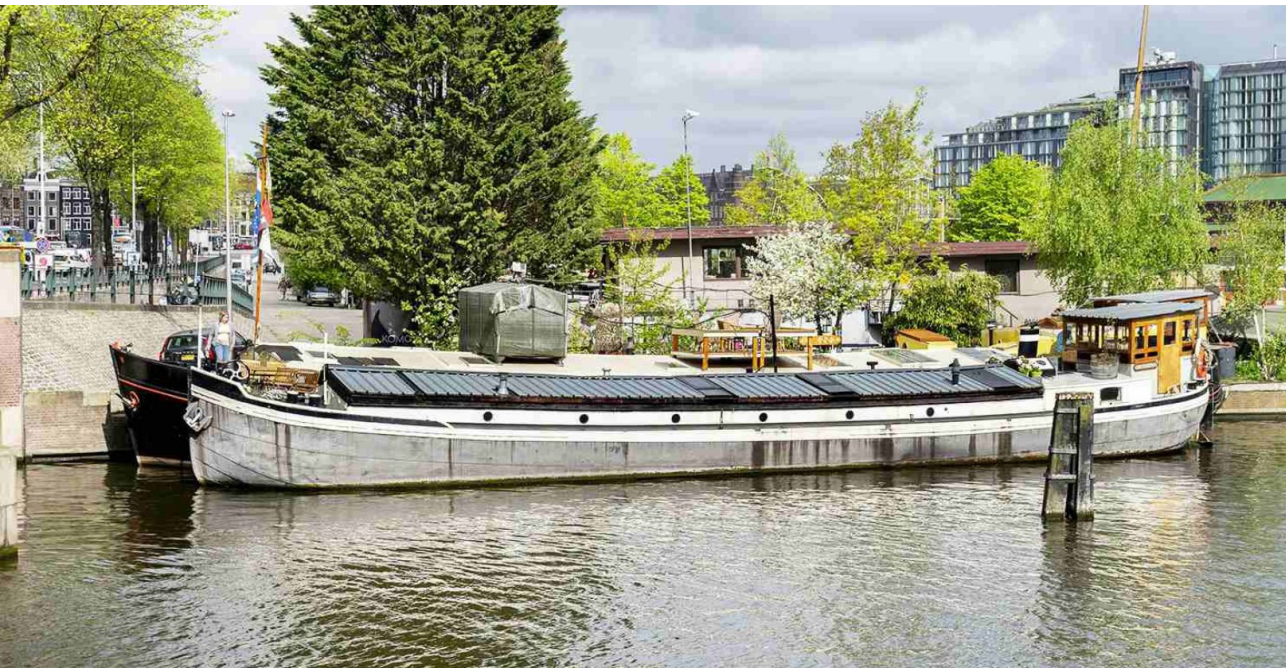
F.8
A woonvartuing on Princes Canal in Amsterdam

F.9
A woonschip moored on the Prins Hendrikkade in Amsterdam

However, when the hull is not designed to move through the water, but simply as a static floating object, the correct word to use is "*woonark*", meaning "ark for living". Since these arks are built on square hulls, made out of steel or –most recently- out of concrete, it is clear that housing is the only possible activity they can deal with. This is why *woonark* are more correctly considered as floating homes rather than houseboats.

In Italian there isn't a proper translation for the word "houseboat" that is in current use as it is in English, normally meaning floating homes too, without any distinction. On the other hand, "floating home" can be literally translated into "*casa galleggiante*" or simply "*galleggiante*". The lack of specific terminology has to deal with the scarce culture existing round houseboating, a tradition that –except for the Ancient Romans- doesn't belong to the Country.

F.10
An ark moored in Amsterdam



In French the literal translation of houseboat is "*bateau-maison*", but other synonymous are is current use, such as "bateau habitable" and "*bateau de logement*" (also said "bateau logement"), all corresponding to the same definition of "a docket boat, primarily used as a house". The expression "floating house", instead, is translated with "*maison flottant*". An interesting aspect is that all these concepts are often directly translated into "*péniche*" or "*péniche aménagée*" (that means "equipped *péniche*").
A *péniche* is a specific kind of working boat. In France, most of the houseboats around the Country belong to this specific category of barges adapted to the Freycinet gauge[10] and nowadays fully converted into accommodation. This can be because the péniche are cargo boats that have always been designed to allowed life on board for a small crew, obliged to spend several days in navigation. Even when talking about the péniche as working boats, French think about them as 'floating houses' for those who work on board and their big sizes (with even the space for a car parked on the deck) help to understand why. In this Country, the use of working boats for inland navigation never reached a definitive decline and the péniche is part of the traditional fluvial landscape.

F.11
Typical French *péniche* Freycinet converted into houseboats, Paris

Of course, this wide range of names won't help to clarify the quite confused background of those not belonging to this niche of the world of boating.

Many authorities across Europe are trying to define the concept of houseboat in order to regulate its diffusion as a permanent home and tax it as a real estate on land.
According to the Canal & River Trust (CRT), the authority that releases Houseboat Certificates in England and Wales, a Houseboat is defined as:

> «A boat whose predominant use is for a purpose other than navigation and which, if required for the purpose, has planning permission, for the site where it is moored. A Houseboat may be used for navigation from time to time provided it does not become its predominant use.»

10 The Freycinet gauge is a European standard governing the size of locks on certain canals, established by a law of Charles de Freycinet's program in 1879. Freycinet's program increased the size of the lock chambers to 39 m long and 5.20 m wide so that they could be crossed by 300 t or 350 t barges with 1.80/2.20 m draught. Consequently, vessels with Freycinet gauge must not exceed 38.5 m by 5.05 m. The *péniche* Freycinet was specially designed for the French and Belgian canal locks and, as a result of the wish to maximise space for freight, the barges tend to be flat-sided, with short, rounded bows and sterns.

The Houseboat Certificate is more adequate if the predominant use of the boat is not for cruising – for example, it is used as a home and it is kept on a long-term mooring. However, there is an alternative form of licence for keeping a boat on British waterways: the standard Pleasure Boat Licence. The terms and conditions are essentially the same, but in this case, the houseboat can be used for constant navigation. The Canal & River Trust's definition differs from the one given by the HMRC[11]:

> «A houseboat is defined for the purposes of VAT as being a floating decked structure which is designed or adapted for use solely as a place of permanent habitation and which does not have the means of, and which is not capable of being readily adapted for, self-propulsion»
> (HMRC Reference Notice 701/20 (April 2012) 7.1).

F.12
CRT Licence

11 Her Majesty's Revenue and Customs is a non-ministerial department of the UK Government responsible for the collection of taxes, the payment of some forms of state support and the administration of other regulatory regimes including the national minimum wage.

1.2 European Houseboaters

After having clarified what is exactly a houseboat in all its shades, the second aspect to explore regards who are the typical inhabitants of floating domiciles.

Living on a boat and becoming a liveaboard is an option that attracts more and more people from all walks of life: families to pensioners, professionals to artists, boat-builders and even students attending university, all willing to reduce their impact on the environment, living closer to nature.
Some of them live in tiny narrow houseboats, some in sea-going crafts, some others in moored floating homes. They can be seen along canals, rivers and lakes in the middle of the countryside as well as in cities, moored in harbours and marinas. Some cruise continuously, some are permanently docked, while others prefer a mix of cruising and mooring according to the seasons and their work responsibilities.

Many newspapers articles have been written on this topic, trying to make a portrait of typical and atypical boat inhabitants. Several stories about beautiful boats and their owners have been told on the pages of main European and American newspaper depicting houseboating as a fashionable emerging trend both in terms of alternative dwelling and fluvial tourism main characters. Several photographic books under Architecture and Interior Design labels have been recently published exploring not only the ultimate trends in urban floating cabins but also showing pictures of intimate details about daily life aboard.

It should be noticed that sort parallelism may be traced between, on the one hand, the American "snowbirds" and the Australian "grey nomads" and, on the other, the European baby boomers[12] who are now in their fifties/sixties and have turned to the water to take up residence. If "snowbirds" and "grey nomads" travel by motorhome looking for milder climates, so do the Europeans who move up and down on rivers and canals.
The most famous couple that could represent this 'category' of users is for sure made by Terry and Monica Darlington, who travelled widely in their narrowboat Phyllis May, in England, France and the USA. Terry wrote three books and a blog[13] about their adventures.

12 Baby Boomers: Born 1945 to 1964. Generation X: Born 1965 to 1979. Millennials or Gen Y: Born 1980 to 1994. iGen, Gen Z or Centennials: Born 1995 and later

13 The three books are titled: Narrow Dog to Carcassonne, Narrow Dog to Indian River, and Narrow Dog to Wigan Pier. They together have sold more than a quarter of a million copies. Their blog: https://www.narrowdog.com/

F.13
Terry and Monica Darlington, on board the Phyllis May

However, many other retired couples are living afloat mainly travelling around Britain's canals, France, Belgium, Germany and the Netherlands. They usually use their own boats, but they are open about renting solutions for those destinations that are not connected to the main European waterways network, such as the rivers of Spain, Portugal and Italy. They often bring their grandchildren with them during the holidays. They represent the main audience of fluvial tourism, followed by families with young kids.

Another generation that shows a growing interest in this kind of housing is the Gen Y, also known as the Millennials, now around their thirties. Facing the need to find accommodation in big cities, many of them appreciate the multiple possibilities offered by living off the grid. Millennials have a lower rate of home ownership than other generations did at the same age and most of them have moved to the high densely populated city due to better job possibilities. Part of this generation is facing big challenges such as having several jobs at the same time, home-working, and frequent business trips. They are a generation of 'movers', changing city every time a good opportunity arrives. This generation (the largest generation in history) is typically keen to impact the world in a positive way: many are vegans/vegetarians, they reckon themselves as nature lovers and DIY fans. Some Millenials are embracing a nomad lifestyle, therefore the freedom offered by a moveable home that gives an ultimate see of waterways is very appealing.

Generation X is a bit less represented but still present especially on boats moored in urban contests. They prefer not motorised barges with spacious and fancy interiors if they moved in as a family, while they are mainly single inhabitants looking for a cheaper accommodation on board narrowboats or modern cruise craft after life-changing events, such as a divorce.
People choose this lifestyle to enjoy the closeness to nature, to escape from today pressures of life ashore and to live the everyday adventure offered by continuous cruising. All this doesn't make them a sub-culture, as many researches have shown: «houseboaters share practices, produce a specific body of knowledge, and form a sense of common identity in a manner that creates houseboat communities»[14]. As said before, they form a very diverse group and have often a strong sense of their local community and its environment.
As a matter of fact, houseboaters can contribute to monitoring the environment and alerting the authorities about emerging problems. Residential boats can also be valuable in re-colonising an urban area and raise interest in waterways, harbours and coasts: many visitors can be attracted by their presence, thus generating a stream of income thanks to tourism.

F.14
Houseboaters portraited in their houseboats for the "Floating Neighbours" project (London, 2013)

14 Chapdelaine P., Dutheil E., Figueiredo L., Potasiak M. and Victor P.T. (2015). «Houseboat living on the Seine», Working papers du Programme Cities are back in town, p.3, 2015-1, Paris.
The same kind of behaviour is shown through the project "Floating Neighbours" realised in 2013 by Luciana Mayume, Manuela dos Santos, Mateus Lira and Vitor Lagoeirothe, at the time students at the Central Saint Martins College of Arts and Design. This students project was supported by CAPES and it is available online: http://floatingneighbours.tumblr.com/

2 _ History of houseboating in the Western world

It is hard to define which was the very first houseboat or floating home in history since almost all the civilisations had a strong relationship with water.
Living on the seacoast or riverbanks was very common among most of the ancient populations.
Navigation is one of the most ancient practice of the human being, developed immediately after hunting and fishing. That is why, every civilisation had its own nautical traditions, building fleets of diverse models of boats, according to their needs, mainly related to explore, fish and, conquer.

Houseboating can find its roots in India as well as in China or in the European continent, but the history of this practise has often been told indistinguishably with the origins of boating. This fact plus a diffused imprecise definition makes it difficult to reconstruct the true history of houseboating, without simply telling the birth of pleasure yachting in general.

In order to give an idea of its history in the Western world, only the most significant examples of its forefathers will be highlighted here.

2.1 Houseboating in Ancient History

2.1.1 Thalamegos

The most famous example of houseboat of the ancient world is the *Thalamegos*, commissioned by the Hellenistic king Ptolemy IV Philopator for himself and his wife, Arsinoe III, in 200 b.C.
Thalamegos in ancient Greek (θαλαμηγός) means "cabin carrier" from the Greek '*Thalamos*', room/cabin, and '*Ago*', carry/lead/haul. According to Casson (1986, pp. 341):

«The Thalamegoi, […], were the *dahabiyehs*[15] of the ancient world, the Nile yachts, such as those that ferried government officials up and down the river.»

The Philopator's Thalamegos is not very well documented, but Callixenus of Rhodes[16] provided a very detailed description of it in his *Peri Alexandreias*:

«[The Thalamegos had the] length of half a stadium, and a width by the widest part of thirty cubits. Its height, including the structure of the pavilion, reached almost forty cubits. […]
Its form resembled neither warships nor merchant ships, but had been altered to suit the depths of the river. Thus, the lower part was shallow and wide, and instead was high in height. The upper parts, and especially that of the bow, stretched considerably, and its curvature was well traced. It had a double bow and a double stern, and it rose to the top, because in the river the waves often rise very high.

Translated in meters, the overall sizes were about 90 metres in length, with a beam of about 13 metres and a height of 17 metres. This *thalamegos* was a huge twin-hulled catamaran made up of two galleys joined together and it was designed exclusively to navigate the river Nile.
The interiors were distributed over two decks. In his description, Callixenus, says:

«In its intermediate cavity were built the banquet halls, the bedrooms and everything else that is needed for daily life.

This highlights the fact that this boat, designed for pleasure cruises, was not sacrificing its interiors in the name of performance, offering to its owners and their guests all the amenities and luxuries of that time accompanied by the pleasure of slow navigation. The materials used for its construction and decoration were the best and most expensive of their kind: ivory, gold, Scythian cedar, thousandth cypress, Indian marble, Paros marble, and so on. According to Callixenus:

15 The plural of the word *'ahabiyeh'*, an alternative form of *dahabieh*: a traditional Egyptian sailing boat.

16 Callixenus of Rhodes was a Hellenistic author from Rhodes. He was a contemporary of Ptolemy IV Philopator. He wrote two works, both of which are lost. One of them, Peri Alexandreias, contained a detailed description of Philopator's thalamegos, which arrived at us thank the Athenaeus' Deipnosophistae (5.204d–206c). Athenaeus of Naucratis was a Greek rhetorician and grammarian, flourishing about the end of the 2nd and beginning of the 3rd century AD.

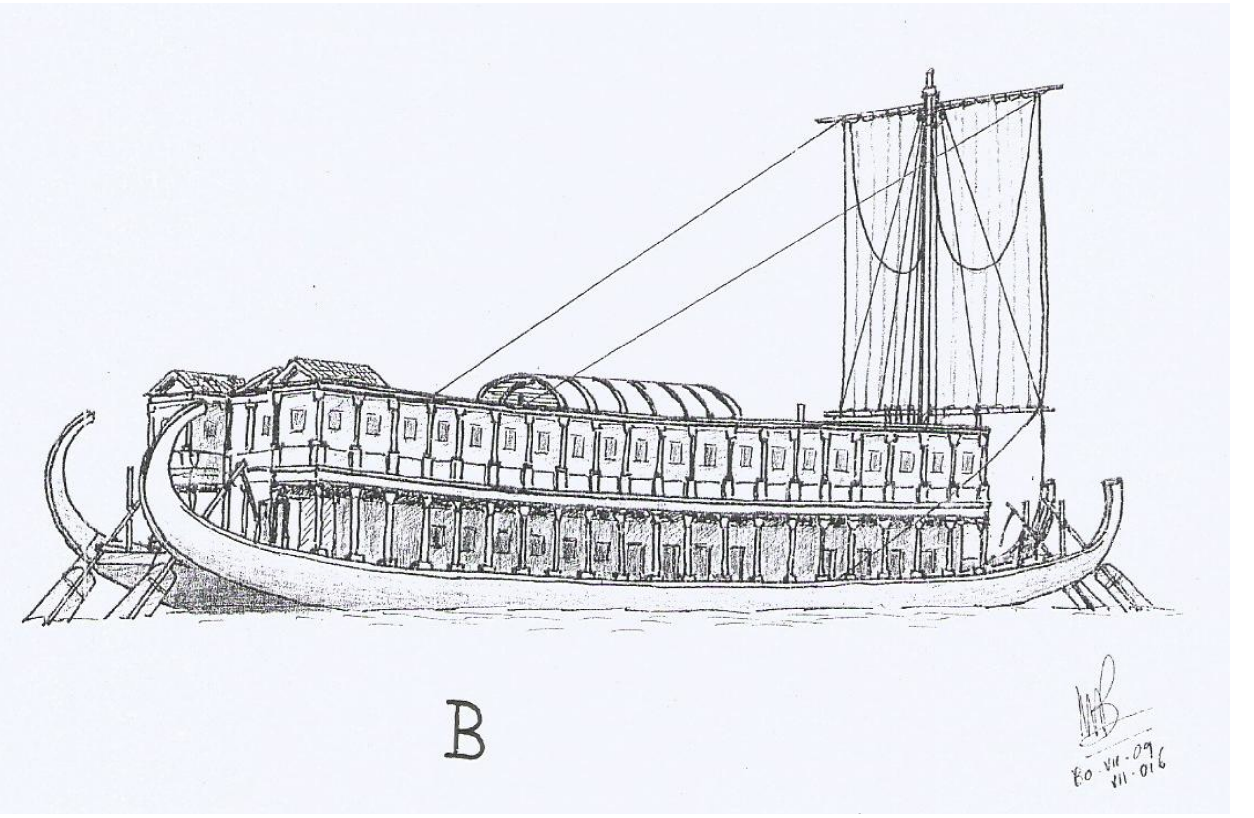
> Near the bow one came upon a chamber devoted to Dionysos; it contained thirteen couches and was surrounded by a row of columns. It had a cornice which was gilded as far as the surrounding architrave; the ceiling was decorated in accordance with the spirit of the god. In this room, on the right-hand side, a recess was built, which was entirely covered with real gold and precious stones so that it looked like a stone wall. Enshrined in it were portrait statues of the royal family made of Parian marble.

This kind of barge is often described as a "palace barge" or "floating palace", and both images contribute to the idea of its extraordinary grandness.
The lack of documentation and the confused translations from a language to another in between centuries, contributed to the common belief that "*thalamegos*" was the name of the vessel designed for Ptolemy IV Philopator, while it is nowadays clear that it was a model of barges in use at that time.

> While Philopator's extravagant creation was singularly spectacular, it was not, of course, the only *thalamegos* in service; Appian (Praef. 10) reports that Ptolemy II Philadelphus possessed eight hundred, gilded both prow and stern (but fit, at the same time, for military service). Cabin-cruisers were customarily used for government business and religious ceremonial. Strabo reports that a short distance out of Eleusis near Alexandria a canal led to Schedia where was found an anchorage for the *thalamegoi* used by the hegemones (that is, government officials) travelling to Upper Egypt (17.1.15 [= 799–800c]). And, of course, there were the pleasure-craft. Strabo also reports (loc. cit.) that fun-seekers held feasts on *thalamegoi* in the shade of the tall bean fields in the delta marshes. These vessels were also used in more mundane ways; for example, in the carriage of freight. (Thus, any definition of *thalamegoi* which allows only luxury yachts and pleasure craft is unnecessarily, and even misleadingly, restricted.). (Hillard, 2002)

As explained in a recent research, it is clear that the Philopator's *thalamegos* cannot be the one in use almost two centuries later, when the last Hellenistic sovereign of Egypt, Cleopatra VII (51-30 b.C.) and Caesar are assumed to have cruised along the Nile on board a sumptuous vessel, accompanied by an impressive military and civil cortege.

> In some scholarship it has passed into (implicit) orthodoxy that the boat (or a close double for which it served as the model) was the Ptolemaic 'state-barge' still in use in 47 B.C. when Caesar and Cleopatra are said to have navigated the Nile. Non-contem-



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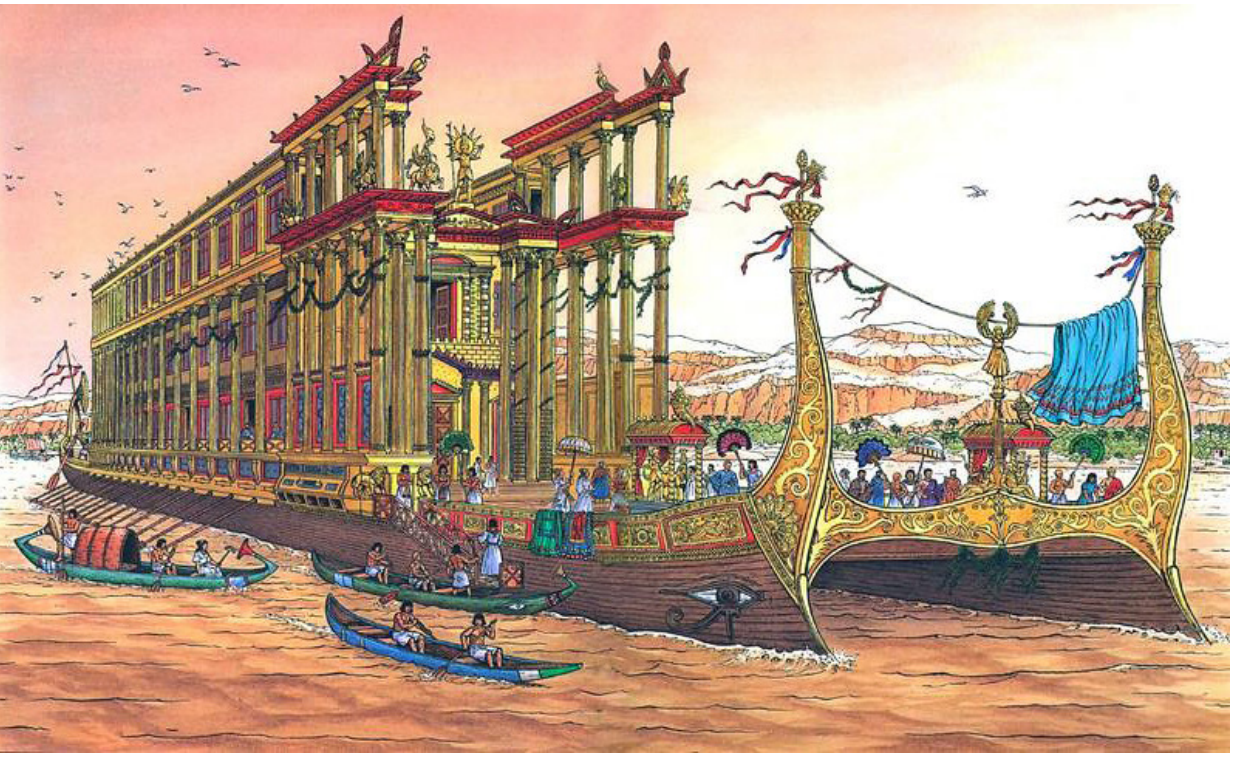
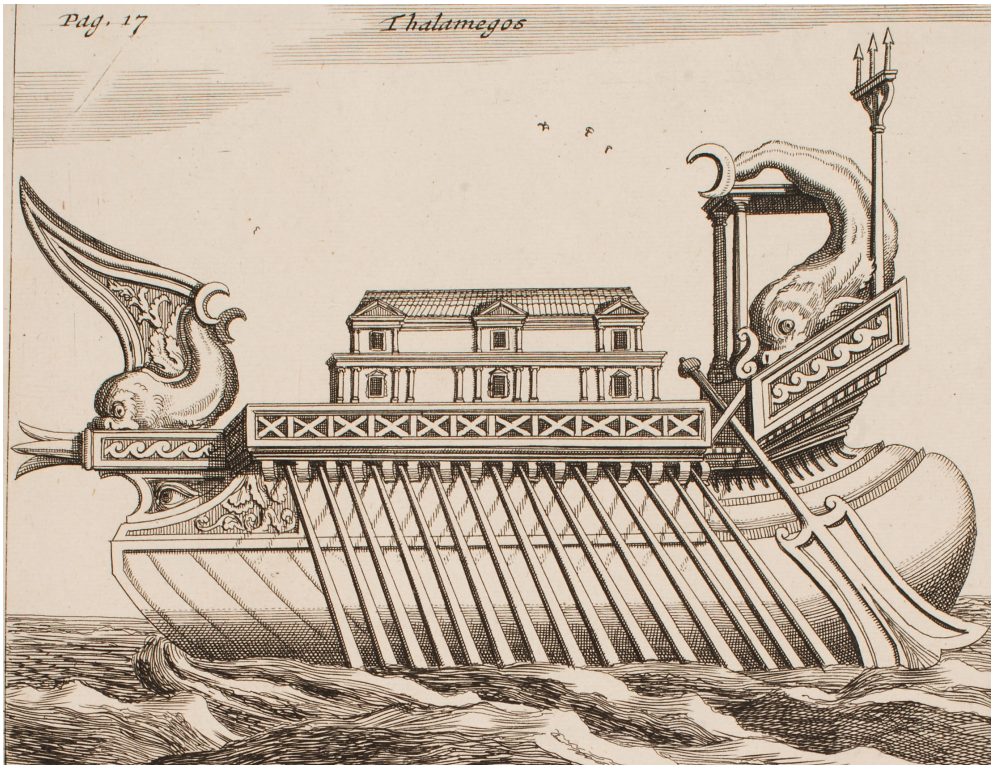


porary accounts, written more than a century and a half after the event, offer the only testimony for that putative voyage. Suetonius (Iul. 52.1) reports that the two traversed Egypt in a navis thalamegus […]; and Appian reports that Caesar 'ascended the Nile with four hundred ships, exploring the country in the company of Cleopatra and generally enjoying himself with her' (BCiv. 2.90; Loeb trans.). […] The earliest interpreters of Suetonius Iul. 52.1 do not seem to have spotted there the potential later recognized. Both Philippo Beroaldo (1493) and Marc Antonio Sabellicus (1506) were reading nave thalamoque, rather than nave thalamego. Thus neither realized that he was dealing with a particular ship-classification. […] This, I imagine, represents the crucial stage in the interpretation of Suetonius' evidence, though the association with Philopator's boat was clearly not intended to carry the weight it subsequently did. Torrentius added, by way of providing a parallel Latin usage, the observation that Seneca (Ben. 7.20.3) called such a vessel a navis cubiculata and offered as another parallel the elder Pliny's reference (NH 7.110) to a vittata navis despatched by Dionysius to convey Plato to Sicily. The Senecan reference was doubtless intended by Torrentius to convey the image of a leisure craft (Seneca's meaning is clear); that of Pliny, no doubt, the image of ceremonial display. Isaac Casaubon, publishing his notes on Suetonius seventeen years later, does not seem, despite a strong interest in Athenaeus (Casaubon published his notes on Suetonius in 1595; his edition of Athenaeus followed two years later, his full-fledged 'Animadversiones' in 1600), to have found the Philopator parallel worthy of rehearsal. He noted, on the other hand, that 'the Egyptian kings' had eight hundred such vessels (an observation drawn, as noted above, from App. Praef. 10, referring in fact to Ptolemy Philadelphus), and provided cross-references, among them the Senecan passage, which suggest that he envisaged thalamegoi as often-luxurious leisure-craft. By the time the first English translation appeared in 1606, Cleopatra's vessel was thus understood in terms of type as a 'barge or galley called Thalamegos', the intention to convey a classification rather than the name of an individual ship being made clear in the accompanying note repeating the information that 'the Egyptian kings' had eight undred. An understanding of Cleopatra's river-boat simply as one of many devoted to leisure seems to have prevailed in the seventeenth century. When Samuel Pitiscus published his commentary, no special significance was seen in Athenaeus' evidence. The latter's citation, as one of two parallel passages, was relegated to a single line suggesting the consultation of 'Athen. V & Max.Tyr. dissert. 31'. His readers were informed that a navis thalamegus was the Greek term for a ship on which (or in which) there was

F.15
Possible reconstruction of the Thalamegos (Bonino, 2016)

F.16
Other possible reconstruction of the Thalamegos

a thalamus. Pitiscus also offered a reference to Strabo, who had noted an anchorage for thalamegoi just out of Alexandria (on which see above), and the opinion, shared with predecessors, that Seneca designated such ships cubiculatae. In the early nineteenth century, Torrentius' thoughts on the matter were given new currency in the commentary of Baumgarten-Crusius: 'there was moreover a certain large "thalamegus" which, according to Athenaeus, Ptolemy Philopator ordered built, such that one would think within its thalamum that one was within the palace itself [followed by Athenaeus' dimensions]'. The association between Philopator's thalamegos and the ship on which Cleopatra and Caesar travelled was thus established (though it was one, as seen above, which competed with other parallels). (Hillard, 2002)



F.17
The Thalamegos, as imagined by Nicolaas Witsen[17] in 1761, sketch on paper, *Sjöhistoriska museet* digital collection

17 Nicolaas Witsen was a Dutch statesman. In his free time, he was a cartographer, maritime writer, and an authority on shipbuilding. He wrote "Aeloude and hedendaegsche Scheepsbouw en Bestier" in 1671, which quickly became seen as the standard work on the subject. The book can be compared with Doctrine for Naval Architecture by fellow-shipbuilder Anthony Dean.

2.1.2 Lusoria and cubiculatae

The popularity of pleasure boats on rivers has to deal with the importance of inland navigation all around the known world at that time.

> Propertius' testimony of them [pleasure boats] on the Tiber demonstrates the use of the river by the Roman elite for pleasure sailing, perhaps in the vicinity of Rome itself. (Tuck, 2013, pp. 239)

In Latin there were several specific typologies of boats, each one with its one name. The Romans named their houseboats "*lusoria*" and "*cubiculatae*", that is the same term used by Seneca to describe Cleopatra's *thalamegos* as seen before. According to several historians "*lusoria*" and "*cubiculatae*" can be considered as the Roman version of the Hellenistic *thalamegos*.

> Other Latin terms specifically connected with rivercraft are *linter, stlattam*, and *lusoria*. […] *Lusoria*, on the other hand, is rather more specific. Meaning literally "pleasure boat", it was originally used of river houseboats, such as the *thalamegoi* of the Nile, then of working craft. […] The *liburna* and *lusoria*, the former known elsewhere only as a naval craft, from the third A.D. on turn up on the Nile as ordinary cargo boats. (Casson, 1986)

It must be noticed that 'pleasure boats' and 'houseboats' have often been used as synonymous, while describing these vessels, even if they are not the same. In fact, we can consider houseboats as a particular niche of the family of pleasure boats but not all the pleasure boats are houseboats.
Moreover, from the quotations here reported, the reader can assume that those who were defined as 'houseboats' by these historians were necessarily riverboats even if this information is not corresponding to its main definition. This fact has been wrongly assumed by many, complicating the attempt to define the forerunners of modern houseboats.
In a note referred to the use of *lusoria*, Casson cites Seneca, showing the existing difference between the *lusoria* and the *cubiculatae*. This document, also clarifies that *lusoria* could also navigate in open waters, meaning two opposite things. On one hand, this means that this pleasure boats must have been primarily designed to navigate in every circumstances, more than the luxurious *thalamegos*, built to impress the guests of the Hellenistic royals as a symbol of their power and magnificence. On the other hand, it is not clear if these boats can still be considered houseboats or if they are only pleasure boats, with more 'nautical interiors'.

> Cf. Seneca, de ben. 7.20.3: *triremes et aeratas non mitterem, lusorias et cubiculatas et alia ludibria regum in mari lascivientium mittam* "I would not send triremes and bronze-shod craft; I should send pleasure boats [*lusoriae*] and houseboats [*cubiculatae*, i.e., boats with *cubicula* 'bed chambers'] and the other playthings that kings use for desporting themselves on the sea." As working craft, see note 62 below. The *lusoriae* apparently were not limited without exception to rivers. IGRR III 48I (mid-3rd A.D.) mentions an official honored by the people of Termessus because, among other things, "He generously exercised imperial authority on the boat [*lusorion*] during the 9th of November, on which day there was brought a sacred statue of [the Emperor Valerian] […]. The official must have arrived by way of the port of Attalia.[18]

Contrary to what happened after the Great War in Europe, where working boats were converted into houseboats in response to the emergency of the housing crisis left by the war, in the Ancient world it was the other way around: when these floating palaces were not needed anymore, the same barges were finding a second life as cargo ships mainly used for inland navigation. This is documented by several historians, who described this common secondary use of *lusoria* and *thalamegos* all around the Rivers under the Roman Empire.

> *Lusoria* originally referred to river houseboats used for pleasure but was subsequently used of working vessels. By the fourth century, the lusoria referred to the light galleys used by the Roman navy on the Rhine and the Danube. It is worth noting Tacitus's description of the huge 1,000- ship fleet that Germanicus constructed in A.D.16, which contained a variety of specially designed ships, including some with two rudders so that the steersman could reverse direction and bring them ashore on either bank of a river. […] Many Greek terms were in use for small craft, which generally appeared on the Nile but were probably used on other navigable streams [too]. (Campbell, 2012)

Other scholars consider the *lusoria*, only as a military boat used to patrol the river, thank its shape that made this kind of boat faster than others and easier to manoeuvre.
The lack of information about *lusoria* is shown by the fact that the

18 The note 62, quoted by Casson states:
"A *liburna* is listed in a papyrus of the 3rd a.D. (P. Ryl. 223) as carrying miscellaneous cargo. In papyri of the 5th and 6th A.D, a ship called a *libernos* (Stud. Pal. vIII 1094, P. Oxy. 2042, Sammelb. 5953) or *libernion* (P. Oxy. 203252, 54) is attested as a cargo carrier. For the *lusoria* (or *lusorion*), see P. Ory. 1048.2, 7 (4th/5th A.D.), possibly P. Oxy. 1905.21 (4th/5th a.D.), P. Rend. Harris 150 (5th A.D.), Sammelb. 9563 (4th A.D.)."

experts agree with its definition of 'pleasure boat', but not all are sure about their initial or secondary use as houseboats. In fact, some historians aren't assuming that this kind of boats were certainly houseboats only because they were mainly cruising on rivers, and this is enlightened by the use of a "perhaps", like in the following case:

> While the overwhelming majority of these vessels were working boats, the *lusoria* was specifically a pleasure boat, perhaps of the houseboat type. (Tuck, 2013, pp. 239)

According to the previous descriptions and the lack of visual documentation, it is more credible that even if both types of boats were pleasure boats, the *cubiculatae*, is closer to the concept of the Hellenistic *thalamegoi* than the *lusoria*. In fact, both of them are more corresponding to the modern definition of houseboats, giving more prominence to their interiors and so to the presence of amenities that normally belonged only to houses on the land. This is highlighted by their own names, which contain the word "room", that help to understand their main purpose.

2.1.3 Nemi ships

Without any doubt, instead, it can be said that a forerunner of modern 'floating homes' can be found in the Nemi ships. In fact, this couple of barges represent the most ancient and recorded case of a raft, usually anchored in a fixed spot, with a superstructure built a real house on top.
Nemi[19] is the name of a small volcanic lake, located between the city of Nemi and Genzano di Roma, just about 30 km south of Rome. The lake was a popular place for entertainment and holidays of the ancient Romans.

The Lake Nemi Ships were built around 37/40 a.C., for the Roman imperator Caligula[20]. These two huge barges were the result of advanced engineering[21] and they were built as luxury accommodation,

19 'Nemi' takes its name from the Nemus Dianae, the sacred forest dedicated to the goddess Diana. Moreover, the lake was called "Speculum Dianae" that means Diana's mirror and on its shore there was also a Roman temple dedicated to her.

20 The ownership is demonstrated by the fact that a lead pipe found on one of the wrecks read: 'Property of Gaius Caesar Augustus Germanicus', that was Caligula's full name. The dating of their construction is reinforced by the dates found on a number of tiles taken directly from the wrecks.

21 Of considerable technical interest was the discovery of a pair of turntables revolved on small wheels arranged around a circle. These were rotating bases designed for an easier movement of the huge rudder blades. Whatever their true purpose, they were proof positive that frictionless bearings had

designed to host official ceremonies as well as the holidays of Caligula and his guests.

After his death in 41 a.C., the Senate of Rome destroyed everything that was connected to Caligula, including the ships of Nemi that had sunk on the bottom of the lake, in order to erase his memory. Since then, the history of the ships became a legend and only at the beginning of the XX century their wrecks were returned to light[22].
The Lake Nemi Ships were unique for the fact that their hulls were recovered intact, since they had been underwater for 1900 years, conserved in the still water under layers of mud, demonstrating that Romans were capable of incredible technologically advanced floating construction.

According to different hypothesis one ship, the bigger one, was an actual floating palace, while the other was a sort of floating temple dedicated to ceremonies for the Egyptian Isis[23] cult or the cult of *Diana Nemorensis*.
The larger ship was decorated with gold leaf, rich marble, mosaic floors, 4 meters high columns and it had incredible amenities such as luxurious furniture, baths, hot and cold water pipes. The Imperator was surely influenced by the tastes of the Hellenistic rulers and the construction of these boats was surely an attempt to show the supremacy of Rome. From the description made by Casson (1991), it is notable that the ships were just a little shorter but wider than the *Thalamegos* of Ptolemy IV.

> « The superstructures were gone but the hulls were in very good shape-and mighty hulls they were too, one measuring some 224 feet (68 meters) in length and 79 feet (24 meters) in beam, and the other just a shade smaller, 213 (65 meters) by 68 (21 meters). Enough miscellaneous items-bronze decorations, mosaic tesserae, chunks of marble veneering-were recovered to show that the barges were as elegant as they were large, veritable Boating palaces. The hulls, it turned out, were put together by incredibly

been designed and used long before Leonardo da Vinci envisioned similar devices 16 centuries later. Also found on board were a remarkable bilge pump that worked like a modern bucket dredge and two anchors, one of oak with iron-tipped flukes and a stock of lead (possibly lead sheathed) and the other of iron and timber with a folding stock of a type not seen again until the 18th century. (Lucas, 2005)

22 After some failed attempts made since the fifteenth century. It was only in the 1920s that the wrecks of the two ships were fully recovered. Unfortunately, both hulls were lost in an arson fire in 1944. Today, they are remembered in their now quite empty museum in Nemi, with two 1:5 scale models and a few of the original relics.

23 The goddess Isis was considered the protector of sailors (My, 2003)

careful joinery: every plank all along its length was pinned to the ones above and below by a line of mortise and tenon joints set less than four inches apart, and every joint was transfixed by a dowel. (Casson, 1991)

F.18
Possible reconstruction of the two Nemi ships in *'Le Navi di Nemi: il mistero sommerso nel lago'* (My, 2013)

Both were flat bottomed and therefore rated as barges intended for inland waterway use only. This choice was leaving the maximum volume possible to the superstructure, renouncing to fast navigation in favour of a better comfort of the living areas. They were steered through 11.3 meters long rudder blades, in order to compensate the huge proportions of the hulls. The bigger barge was almost certainly powered by oars, as structural supports for the rowing positions protrude along the sides of the hull. In order to make the barge more manoeuvrable, the bigger one was equipped with four rudders[24] (two on the bow and two on the stern).

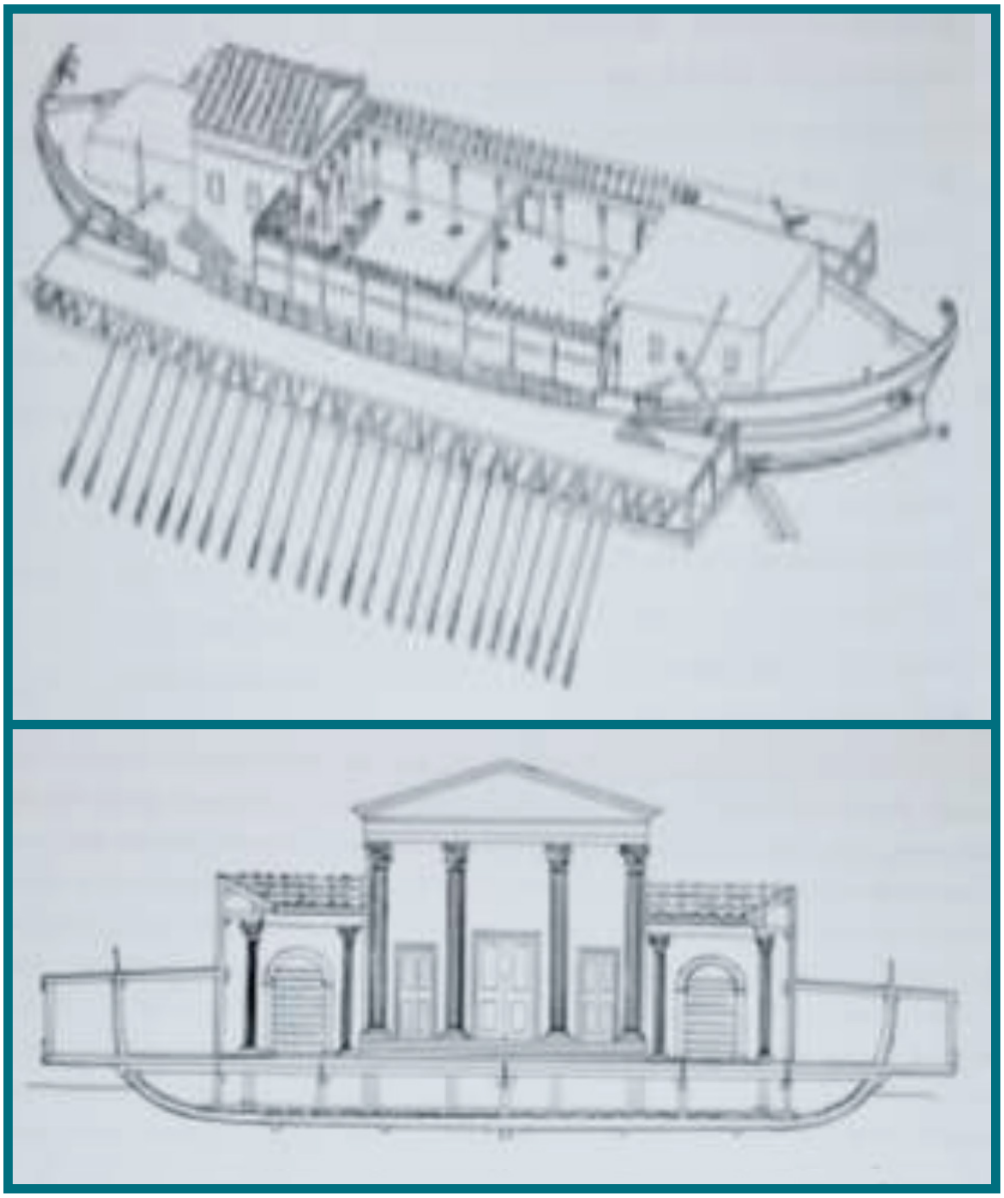
The smaller barge was equipped with only two rudders and it seems to have been towed only when needed, by the other or by smaller boats, since it had no visible means of propulsion. However, there was evidence that it carried a square sail set from a single mast, which probably was a useful aid while towed. In both cases, compared to other barges of the same period, the cruise velocity of both barges must have been very slow, but considering the huge dimensions and the kind of superstructure, it is obvious that moving around the lake

24 Similar pairs of steering boards are frequently documented in early II century depictions of ships.

wasn't a priority.

According to Marco Bonino, who wrote a lot about these ships, there was a lack of coordination between the structure of the hull and that of the superstructure, which suggests that naval architects designed the hulls, while civil architects then designed the superstructure to use the space available after the hulls were completed.

F.19
Riconstruction of the "seconda nave" (Bonino, 2013)



According to Suetonius[25] Caligula loved to spend time aboard sumptuous ships:

> «He [Caligula] had *Liburnian* ships built with ten orders of oars with the sterns covered with gems, polychrome sails, with thermal baths, porches, large *triclinia* and even with a large varieties of vines and fruit trees. And on these he used to sail while lying down all day long along the banks of Campania between dances and music.»

The *liburnia* was a military vessel largely used all the Roman wars on water. The boats described by Suetonius may have been *liburnia* converted into "houseboats" or, has highlighted by the Nemi ships it was probably normal to built hulls that were then equipped differently according to their final function, even by different teams of experts. This will explain why the *lusoria*, often described as a fast patrol vessel in the II century was also in use as "pleasure boat", maybe even has a houseboat, at the beginning of the I century and then converted for different purposes, as explained before. If superstructures and hulls were designed as separated entities, as it seems, these boats can be considered forerunners of the concept of "transformable" or multifunction boats.

Despite the real purpose behind the construction of the Nemi Ships, according to Suetonius, it is clear that houseboating was a popular recreational activity for Roman aristocracy.

25 Gaius Suetonius Tranquillus, commonly known as Suetonius (69 –122 AD), was a Roman historian who wrote during the early Imperial era of the Roman Empire. His most important surviving work is entitled De Vita Caesarum, that includes the biography of Caligula.

2.2 Houseboating from Middle Ages to the Industrial Revolution

Before the spread of houseboating as the popular activity of nowadays, people used to live on board riverboats since the birth of inland navigation. The history and the type of cargo boats equipped with a living space for a crew -and later on for the boatman's family-, is double-crossed with the history of the inland waterways system of each country. The boatmen and their families are the modern ancestors of the now called "boat dwellers", using their working boats as their permanent homes.

2.2.1 History of Inland waterways

Canal building finds its routes in ancient history in fact, Assyrians, Sumerians, and Egyptians are known for their elaborate canal systems. However, the most remarkable works are from the Romans, worldwide known for their extensive systems of river regulation and canals in Italy, France, Germany, the Netherlands, and Great Britain. After the fall of the Roman Empire, inland navigation infrastructures seemed to have had a temporary rest period in the whole of Europe. Only around the 12th century, canal and river navigation revived for the transportation of building materials in response to a European spate of building projects, such as castles, monasteries and churches, as explained in the Encyclopaedia Britannica.

> River navigation was considerably improved and artificial waterways were developed with the construction of stanches, or flash locks, in the weirs (dams) of water mills and at intervals along the waterways. Such a lock could be opened suddenly, releasing a torrent that carried a vessel over a shallow place. The commercially advanced and level Low Countries developed a system of canals using the drainage of the marshland at the mouths of the Schelde, Meuse, and Rhine; about 85 percent of medieval transport in the region went by inland waterway.
> Because shipping was handicapped where barges had to be towed over the weirs with windlasses or manually, the lock and lock basin were evolved to raise boats from one level to another. (Marriage Marsh, Davies, 2010)

One of the principal commercial regions of medieval Europe included the territories of the North of Italy. An important part of what was later called the *Navigli* system was built between 1179 and 1209.
The *Naviglio Grande* canal was almost 50 km long and it had a fall of about 34 meters and it was mainly used to transport marble for the

construction of the Duomo, the Cathedral of Milan[26].

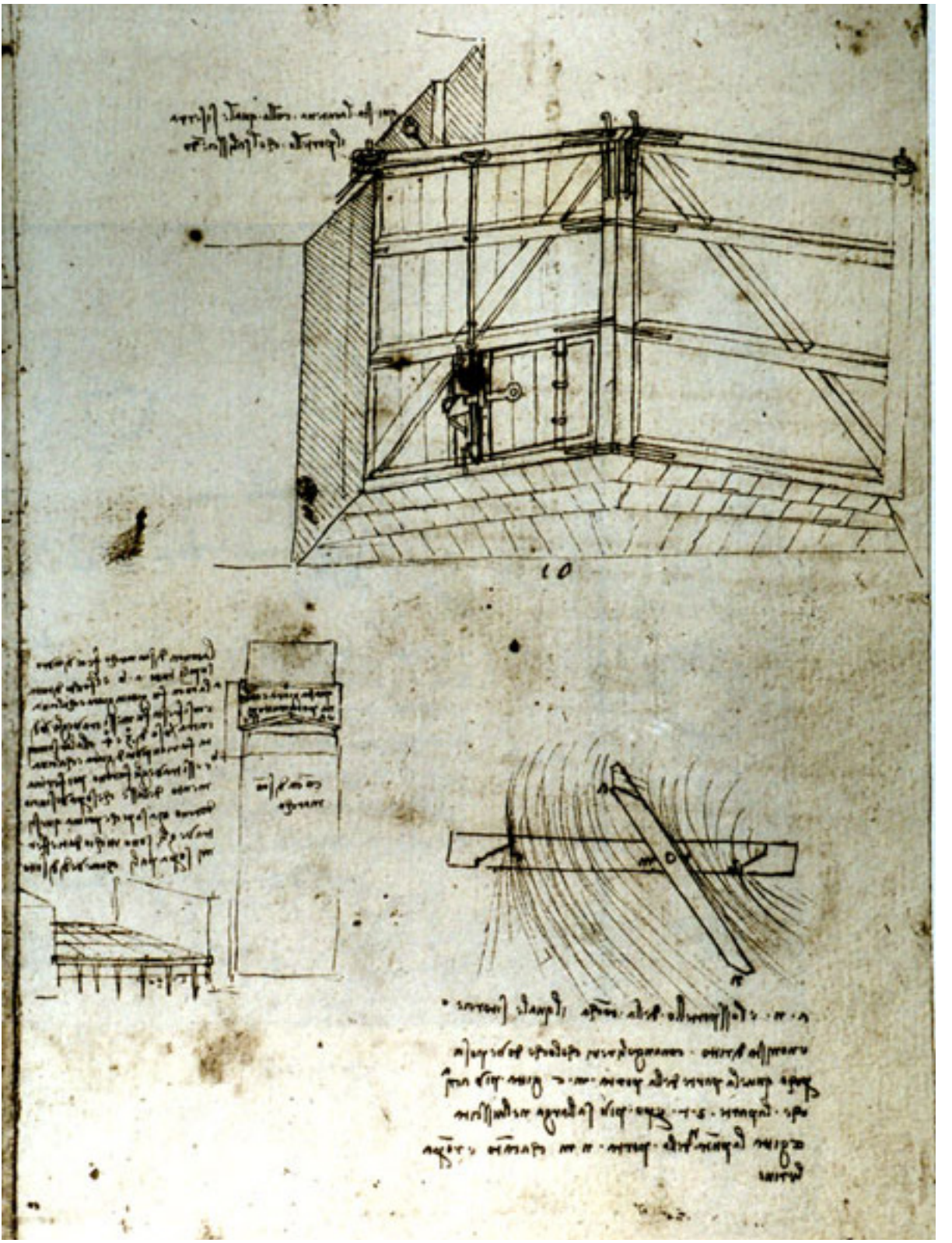
> Although a primitive form of lock had been in operation as early as 1180 at Damme, on the canal from Brugge to the sea, the first example of the modern pound lock, which impounded water, was probably that built at Vreeswijk, Netherlands, in 1373, at the junction of the canal from Utrecht with the Lek River.
> Outer and inner gates contained a basin, the water level of which was controlled by alternatively winding up and lowering the gates. In the 15th century the lock-gate system was much improved with the addition of paddles to control the flow of water in and out of the lock chamber through sluices in the gates or sides of the lock.
> Commercial needs soon encouraged canal construction in less ideal locations. The Stecknitz Canal, built in Germany (1391–98), ran 21 miles from Lake Möllner down to Lübeck, with a fall of 40 feet controlled with four stanches; the canal was later extended south to Lauenburg on the Elbe to establish a link between the Baltic and the North Sea. To deal with a fall from the summit to Lauenburg of 42 feet in 15 miles, two large locks were built, each capable of holding 10 small barges.
> The development of the mitre lock, a double-leaf gate the closure of which formed an angle pointing upstream, heralded a period of extensive canal construction during the 16th and 17th centuries. The canals and canalized rivers of that period foreshadowed the European network to be developed over many years. (Marriage Marsh, Davies, 2010)

In the 15th century, Leonardo da Vinci's invention of the mitre lock (still in use today) and the artificial supply canals made it possible to build longer canals, which brought to the development of interregional commercial traffic.

The two hundred years following these inventions, were the most important in terms of the development of the inland navigation systems around Europe. The main countries that invested in canals construction were France, the region of the Flanders[27], Germany and the UK.

26 The barges loaded with Candoglia marble, the one used for the construction of the Duomo did not pay duties on waterways inland transport, thanks to the inscription "AUF", meaning *Ad Usum Fabricae*, referring to the *Veneranda Fabbrica del Duomo*. In the dialect of Milan, "auf", and later "a ufo", have become synonymous with free, something that you get without paying.

27 The "Flanders" was a medieval principality in the southwest of the Low Countries (the now-called Benelux Countries), which included the French department of Nord, the Belgian provinces of East Flanders and West Flanders, and the Dutch province of Zeeland. The name appeared as early as the VIII century and is believed to mean "Lowland," or "Flooded Land". '*Flandre*'



F.20
Leonardo da Vinci's Mitre lock sketches

In France, according to the Encyclopaedia Britannica, several infrastructures were built around the second half of the 17th century. Most of them are still in use today for commercial or recreational activities.

> […] the Briare and Languedoc canals were built, the former linking the Loire and Seine and the latter, also known as the Canal du Midi, linking Toulouse with the Mediterranean. Both were remarkable feats of engineering. The Briare Canal (completed 1642) rose 128 feet to a plateau with a summit level 3.75 miles long and then dropped 266 feet to the Loing at Montargis. It included 40 locks, of which a unique feature was a staircase of six locks to cope with the fall of 65 feet on the descent from the Loing to Rogny. Construction of the 150-mile Canal du Midi joining the Bay of Biscay and the Mediterranean via the Garonne and the Aude ran through very rugged terrain. Begun in 1666 and finished in 1692, it rose 206 feet in 32 miles from the Garonne at Toulouse to the summit through 26 locks, and, after a three-mile stretch along the summit, then descended 620 feet through 74 locks for 115 miles. Near Béziers a staircase of eight locks was built, and six miles farther upstream a tunnel 180 yards long was constructed; three major aqueducts carried it over rivers, and numerous streams were diverted beneath it in culverts. The most notable technical achievement was a complex summit water supply that included unique diversion of flows and storage provision. (Marriage Marsh, Davies, 2010)

The main cities of the Flanders region were connected by artificial canals built with veritable achievements, such as the lock at Boesinghe on the canal from Ypres to Boesinghe beside the Yser River.

> The fall of 20 feet on this four-mile stretch was contained by a single large lock. Side ponds with ground sluices were provided for the first time to reduce the loss of water during the lock's operation. The ponds took one-third of the water when the lock was emptied and returned it for the filling. (Marriage Marsh, Davies, 2010)

The Flanders canal system was connecting Brussels to Willebroeck through a canal almost 30 km long, shortening navigation by half, while Brugge was linked to Passchendaele, Nieuport, and Dunkirk by a 70 km long one, that later reached Ostend too. Dunkirk was also connected to the Aa River, where a large tide lock was constructed at Gravelines, on its mouth.
Around the same period of time, the three great German rivers, the

is a French word, while in Flemish it is known as '*Vlaanderen*'.

Elbe, Oder, and Weser, were linked by canals for commercial and political reasons, one of which was the advantage of bypassing of tolls imposed by the Holy Roman Empire through its numerous states and principalities.
In 1818, the Saint-Quentin Canal brought Paris and the Borinage into communication and a few times later, the Meuse and Scheldt basins were to be connected[28].

Because of long distances to navigate, people have been living afloat on European's canals since the Industrial Revolution (if not even before), when the majority of artificial canals and navigation systems were constructed all around the continent.

In the XVIII century canals were used to transport industrial goods and raw materials in most European countries. As explained before, every country developed different infrastructures and so a range of diverse types of working boats. When the crew was involved in long distance navigations, the boat was equipped with a small living quarter, dedicated to allowing life on board.
Britain's narrow boats were the first boats in Europe equipped as a home, where entire families were living afloat together. France and Belgium had their own version of working/house-boats, but the bigger size of their waterways and so of their barges, gave a different result, explaining why, inland navigation, and so living aboard working boats, has never known a rest moment in those countries.

2.2.2 Britain's first "houseboaters"

In Britain, the standardisation of canals and locks dimension is the cause of their picturesque traditional working boats, typically narrower than any other European barge.

These so-called "narrow boats"[29] were originally wooden boats drawn

28 In order to make this connection, it was necessary to cover a 90 m level difference. To solve this problem four hydraulic elevators were built. The first elevator in Houdeng-Goegnies was completed in 1888, but the work stopped for about thirty years, leaving this elevator to operate simply as a matter of curiosity. The canal was finally opened to navigation in 1917. These lifts are now classified as a World Heritage Site by UNESCO.

29 A narrow boat was traditionally a cargo carrying boat found on the British inland waterways from the 18th century onwards. On the UK navigable waterways locks and bridge holes are a minimum of 7 feet wide. The phrase "narrow boat" often refers to the original style of a working canal boat or a modern replica of this type of boat. […] However, the modern meaning of the term "narrow boat" in The Concise Oxford Dictionary simply reads, "A narrow boat is a canal boat, esp. one less than 7 ft. wide". The Canal and River Trust, and magazines like Waterways World have adopted the term "narrowboat" to refer to pleasure boats and liveaboard canal boats that are

by horses[30]. These powerful animals could pull much bigger loads over frictionless water than by road and as soon as this huge jump in productivity took place, led to soaring use of canal freight, the price of coal went down, contributing to the fast industrialisation of the country. Britain's inland waterways transport system rapidly expanded in response to the rise of the demand for industrial transport. The biggest growth was in the so-called "narrow" canals, which extended water transport to the emerging industrial areas to main UK cities.
During this period, also known as "canal mania" [31], huge investments in canal building were made. Thank for further development of building techniques, the older canals system was improved. Canals straightening, embankments, towpath [32], tunnels, aqueducts, inclined planes, and boatlifts contributed to saving hours of navigation, putting down journeys' costs.

« Until the second half of the 18th century there was no standardisation of inland waterway craft and boat size varied around the country on the different river navigations. The concept of a boat approximately 7ft wide by about 70 ft long is attributed to James Brindley[33], who was one of the most influential canal engineers. Brindley reached an agreement with the Proprietors of the Trent & Mersey Canal Company to build the locks on their canal to take boats of that size. The dimensions, which were considerably narrower than craft using the rivers that the canal

built with the similar style and dimensions to the old cargo carrying narrow boats. (Bassett and Melmoth, 2012)

30 This is known as "horseboating" and it was the backbone of the canal transport industry since its beginning. In fact, a horse pulling a boat or barge wastes minimal energy through friction, and it is this efficiency calculation which led to the development of Britain's canal system in the 18th Century. Horses can move almost 50 times more weight in a boat than they could in a cart on old-fashioned roads. Horseboating reigned supreme until the advent engine and of the railways' competition. However, this simple and romantic practice continued in Britain until the mid-1960s -lasting almost 200 years.

31 'Canal Mania' is an expression used to refer to the period of intense canal building characterising England and Wales between 1790s and 1810s.

32 A towpath is a road or trail on the bank of a river, canal, or other inland waterway. The purpose of a towpath is to allow a land vehicle, beasts of burden, or a team of human pullers to tow a barge. This mode of transport was common where sailing was impractical due to tunnels and bridges, unfavourable winds, or the narrowness of the channel. After the Industrial Revolution, towing became obsolete when engines were fitted on boats and when railway transportation superseded the slow towing method. Since then, many of these towpaths have been converted to multi-use trails. They are still named towpaths — although they are now only occasionally used for the purpose of towing boats.

33 James Brindley (1716-1772) was a British engineer and pioneer canal builder, who constructed the first English canal of major economic importance.

would link to, were perhaps due to the need to tunnel under Harecastle Hill. This then became the standard size of lock on the rest of the Midlands canals built subsequently. […] From the late 18th through to the early 20th centuries there were hundreds of companies building and operating narrow boats for the transport of goods around the waterways system, some long distance and some just for local traffic. (IWA)

Between the 1770s and the 1830s, during the so-called "Golden Age" of British canals, the country could boast an almost completely connected modern canals network of nearly 4,000 miles (over 6,400 kilometres), running from the extreme South of England to Scotland.

Several canal companies were started, they were all rivals and competition was unbridled. However, for the first era of canals, family boating did not exist. Crews were all male and their families lived in cottages on the bank.

> Initially, the long distance boats typically saw the men work on the boats and their families stay on the land. Early carrying companies typically employed a man to steer the boat and a boy to lead the horse. As time went on, however, and economic situations changed, particularly with the competition from the railways, it became unviable to keep a house on the land with the wages paid to a boatman, and so the long distance boatmen's families moved on to the boats to work as unpaid crew.[34]

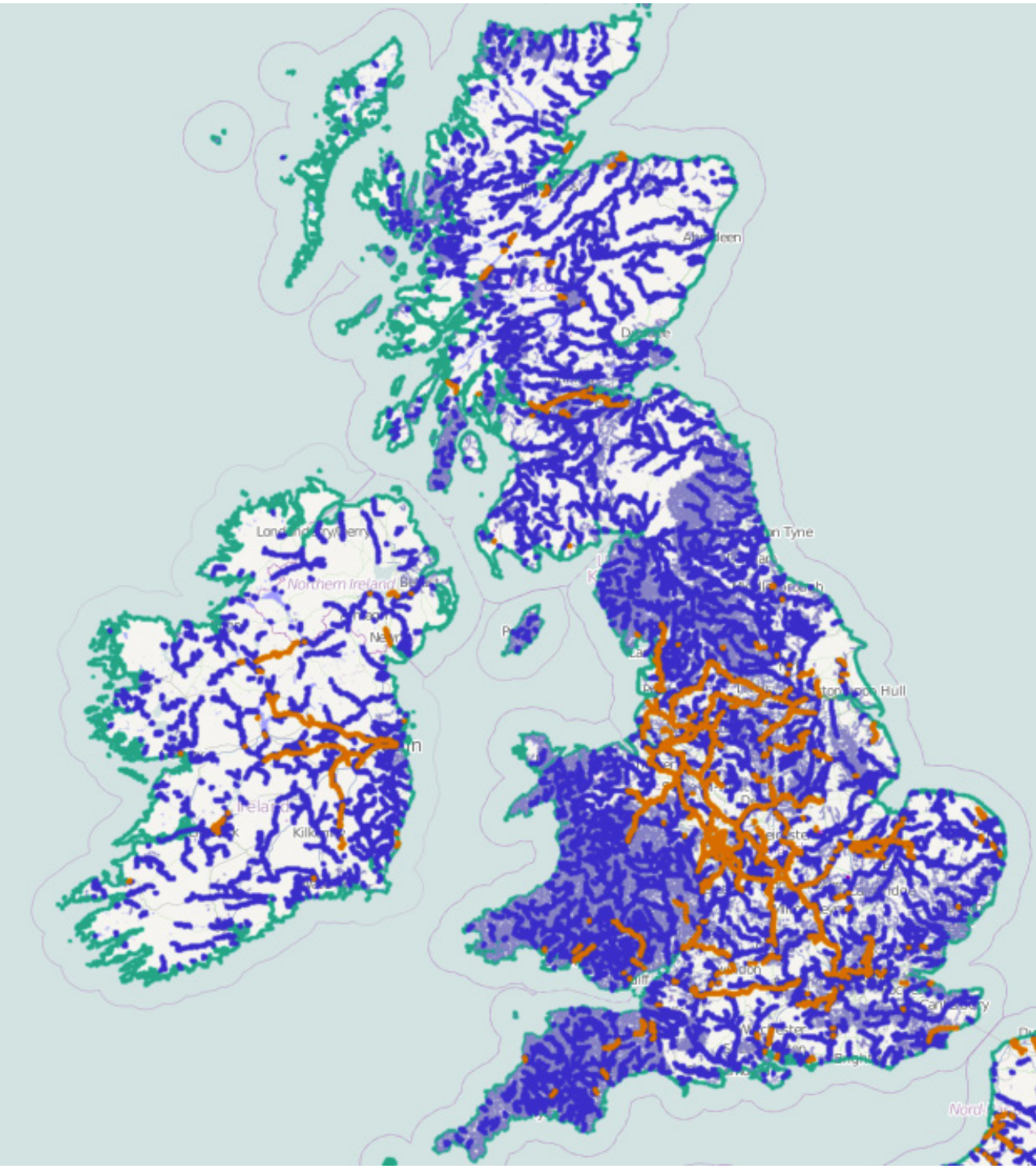
In fact, by the second half of the 19th century, railways began to overtake the importance of canals. Canal companies were unable to compete and for many, the decline began. The first to pay the price of railways competition were the boatmen, whose pay was reduced. It is at this point of the Industrial Revolution when the pay of boatmen became insufficient to cover the expense of a house on land for the families, that "family boating" became standard practice across the canal system, creating a considerable community[35] of boat people. Families[36] were made up by several children, and living all together on

34 Waterways.org.uk. (2014). The Evolution of the Narrow Boat. [online] Available at: https://www.waterways.org.uk/blog/evolution_the_narrow_boat [Accessed 22 Mar. 2018].

35 According to the Canal and River Trust, though this community ostensibly had much in common with Gypsies both communities strongly resisted any such comparison, and surviving boat people feel deeply insulted if described as 'water gipsies'.

36 Families living afloat were often marginalised from land-based society. The church of St Thomas the Martyr, Oxford, under the curacy of John Jones, acquired in 1839 an innovative "Boatman's Floating Chapel", a houseboat to serve the families working on the river and the canals. This boat was St

F.21
Maps of Britain's canals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such tiny boats, with very small interiors was complicated.

> On the one hand, the only way in which social conditions could really be improved for boating families, the only solution to the problem of education, social isolation and poor accommodation, was for children, and perhaps women also, to be prohibited from living on canal boats. Yet it seemed that if such a prohibition were to be brought about by law, it would go against one of the main aims of social legislation in the period which was to inculcate such norms as respectability and family cohesion. […] Eventually, in May 1877, a Bill was introduced to provide for the regulation of canal boats used as dwellings. The Act was passed in August 1877 and became law the following year. Regulations drawn up under the Act laid down a minimum standard of accommodation on board, and regulated the number, age and sex of persons permitted to inhabit the cabin. There was nothing, however, to prohibit or limit child labour or to ensure even a minimum of education for children resident on board. Furthermore, there was no provision in the Act for its enforcement. No inspectorate was created and no penalties fixed for violation of its provisions. Implementation was left to local authorities and they did so with varying degrees of enthusiasm. In Birmingham, the Chief Constable of Police was given the responsibility of registering boats. In other districts it was the local surveyor or sanitary inspector. (Freer, 1991)

Even if only the captain of the boat was paid, the whole family was in charge of helping in several ways: from towing the horse, to load and unload the freight. Velocity was making a relevant difference in the final payement[37], so families were working as a well-organised team. Some families were even working with two boats at the same time, in order to benefit two cabins of living accommodation, as well as twice the cargo carrying capacity. The towed boat was called "butty". According to many authors, writing about this topic, this name probably come from the word 'buddy', which means 'friend'. However, the Oxford English Dictionary, states that this term is from a dialect word and it means 'companion'.

Thomas' first chapel of ease; it was donated by H. Ward, a local coal merchant, and used until it sank in 1868. It was replaced by a chapel dedicated to St Nicholas, which remained in use until 1892. Nowadays, especially in France, there are more recent examples of houseboat-churches built on converted *pèniches*.

37 As on the sea, the first arrived was selling his freight easier and more expensive. Furthermore, if the boaters unloaded the cargo by themselves, their pay was higher.

The rear portion of the boat became the "boatman's cabin". At the entrance, there were typically a big step, used to contain the coal box, a stove, a steaming kettle and, gleaming brass, all enriched by fancy laces, painted housewares and decorated plates hanged around. Despite the rich decoration, the lack of space and comfort was the main feature of this first concept of "houseboats". Over the years standardised layouts of the interior became popular, with the living quarters at the stern of the boat and the cabin as the central part. The main living quarters was normally measuring around 2 x 3 meters.

F.22
Boat family on the Grand Canal Union with their pair of butties

> Boats without a living space were known as day boats, whilst cabin boats were built to travel the system, although every inch given over to accommodation was of course one less inch available for cargo, so the cabins tended to be almost ridiculously small. […] These basic styles became more standardised with the coming of cargo-carrying fleets, the most famous of which is probably Fellows, Morton & Clayton. (Corble, 2010)

During the Victorian age, boats were often highly decorated, inside and outside with bright and cheerful colours. The outside of the boat represented the company, but it also showed a sense of pride for the families that were living on them. So, the first aim for this colourful painting was probably to help distinguish boats otherwise too similar to each other. Boats were, of course, given names, which were shown on the outside with the company's name if the boat wasn't privately owned. In this specific case, the boat was decorated with the phrase "Number one" that was the "code" to show that the owner was an independent self-employed boatman. In both cases, it was very important for the business that the lettering could be seen from a distance. Decorations were made by two colours at least, using the typical

fonts of the time for the written parts. The most popular colours for boats were red, white, blue, yellow and green. Romantic landscapes, on fashion during the Victorian age, as well as beautiful buildings, flowers, animals and geometrical drawings were painted on every centimetre of the boat, covering doors, fitted furniture, lamps, drinking cans and even the horse's harness. It is about this time that the traditional boat decoration is known as "Roses and Castles" made its fortune[38].

F.23
An old narrow boats at the Black Country Living Museum in UK. A part of the boat was used to carry the freight, while part of the superstructure was dedicated to the family daily life

38 "Roses and castles" kind of decoration is one of the most distinctive features of Britain's canal craft.

> Go back a little, however, and this emphasis on colour seems less natural. The original canal boats were, after all, very much working craft, with those working them having little time and even less money to spend on fripperies. Boats, like the Model T Ford that followed, were black. It was not until some time into the canal age that the first references to what we regard today as traditional canal boat painting arose, with the earliest attribution generally accepted as one dating back to 1858, which described the style as being in 'the great teaboard school of art'. This lovely put-down suggested that the style matched that seen on the cheap tin trays of the time. The date when it was written is equally significant, being nearly a hundred years after the Duke of Bridgewater opened the first commercial canal, suggesting that what we now regard as traditional canal boat decoration took a while to establish itself. (Corble, 2010)

Any kind of decoration was usually added only when the boat was in the yard for maintenance or repairs and this time was obviously kept to a minimum. Therefore the decoration needed to be basic, mostly geometric designs. The figures were usually widely recognized and sometimes associated with good luck or positive thoughts.

> The chances of meeting someone you were related to, not once, but a few times a day, were quite high, and as such, pride in a 'well-kept home', for their boat was their home, was high. (Ivi)

The origins and the reasons behind the theme of roses and castles are unknown. However, some theories suggested that there are links to the Romany culture, which shares many themes with canal boatmen but there is no evidence to support it, plus the boatmen canal community never appreciated to be related to the gipsy culture. Other hypotheses see possible comparisons with similar folk art in places like Scandinavia or India. Another possibility is that the painters of the time spotted this new market simply echoed the styles that had proved popular in the nascent consumer goods industries emerging in the mid-Victorian period, explaining the link to the 'teaboard style'. However, other influences have been seen in the Gothic revival around that time or in the decorations used on agricultural carts.

> Decorative traditions have also been maintained and, if anything, enhanced. There are a number of skilled artists still plying their trade on canal boats, and classes are available from these and the various museums for those who want to know more. Finally, no boat show is complete without at least one stand selling what is now known as 'canalia' decorated with roses and castles, and no boat, be it privately owned or part of a fleet, is complete without a reminder of the golden days of roses and castles. (Ivi)


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2.2.3 First liveaboards families of the Flanders region

Only a few years after the UK, also in the Flandres region working cargo boats became a home for many families, working as a crew on inland waterways.

Since the Roman age, in Gaul, most of food and construction materials were carried by water. Since that time, inland waterways transport represented a safer and cheaper alternative to transport by land. In the Middle Age, commercial traffic and shipping continued to flourish.

As early as the XV century, canals were dug across Belgium. In 1434, Philippe Le Bon authorized the canalization of the Seine. Marie de Bourgogne then had the Willebroek Canal built, which was inaugurated in 1561. Shortly afterwards, the idea was born to create a canal between Charleroi and Brussels, then another one, linking Mons to the previous one.

Before the appearance of the junction canals, navigation was mainly regional. The women stayed ashore with the rest of the family, while the men went sailing. Part of the ship was therefore converted into a small dwelling for the crew. However, from the 18th century onwards, the wooden "flat-bottomed riverboat" barge became the sailor's workplace and permanent residence. The crew was made up by the entire family, which was used to share the work, from driving to maintaining the boat –and the "house".

At first, the movement of the barges was made possible by the muscular strength of the whole family of the bargemen. Women and children pulled the boat from the towpath, using a handyman's harness. Then, this role was taken by horses, donkeys and mules. Technological developments allowed the emergence of electric "loco-tractors", travelling on rails, replacing animal effort. In the delicate passages, the barges were assembled in convoys and towed by towers, motorized boats (steam-powered, then electric). They halted themselves on a submerged chain, fixed at the ends of the course. They were able to tow up to six loaded barges at a time.

The French inland navigation industry flourished rapidly, but in the middle of the XIX century it faced a formidable competitor: the railways, preferred by many politicians. However, Baron Charles de Saulces Freycinet, the French Minister of Public Works and then President of the Council, presented a plan for the development of French heavy industry by improving the transport of raw materials and coal in 1879. Its ambition was economic and strategic, industrial and military, and involves the construction of new waterways and the modernisation of the network: 468 kilometres of canals were built and 2453 were modernised. He standardised the canal locks: 40m long and 5.20m wide. He set this minimum dimensions for these waterways locks based on a type of boat from the North, the 'Flemish barge' (38.50 x 5.05 m) also known in France as "*pèniche*". This kind of

boats was then nicknamed "*freycinet*"[39] and it became the most common type of boat in the whole area, from France to Belgium and the Netherlands. He was concerned with general progress, he encouraged mechanical propulsion and towing on man's back was banned at the end of the XIX century.

F.24
The "Freycinet" lock, *èclusе de Frouard*, with a *péniche*, near Nancy, France

At the same time, a similar law was passed in Belgium. For a century, the ever-changing railway infrastructure caused a decline in river traffic.

As the size of the barges was limited by that of the locks, it was necessary to reduce the size of the accommodation of the boatman and his family to a strict minimum in order to carry as many goods as possible. The accommodation, called in French '*rouf*' (from the Dutch '*roef*', very close to the English 'roof', referring to the now-called 'deckhouse'), was, and still is, located at the very back of the boat.
At the beginning of the twentieth century, the barge's interior living space was limited to the wheelhouse; the beds below were enclosed into a sort of wall-closet. The total floor surface was about 10 square meters, to house a large family where the children often slept in the hold, on the cargo of coal or wheat. The richest had a mahogany living room, with bevelled and engraved door windows or stained glass.

The destruction and damage of many ships during the two world wars led to the acceleration of the evolution of inland navigation.

39 See chapter 3, page 99.

The last wooden barges disappeared and were replaced by metal constructions, identical to the previous ones. A new mode of propulsion was also introduced: an engine and a propeller fixed at the rear of the barges, which were then called self-propelled. These allowed the bargemen to move around independently. However, the engine was not very powerful, with engines ranging from 70 to 90 horsepower (1,000 horsepower for the most recent).

F.25
Interior of a *péniche*
Gravure, beginning of the XX century

2.3 Modern Houseboaters History

2.3.1 First modern boat dwellers of the Seine

Few pioneers or genuine original people, who were not led to the working boats, such as artists and writers, were already living afloat only for pleasure even during the XVIII sec.

In fact on the riverbanks of the Seine, the painter Charles François Daubigny (1817-1878) turned his first boat, the *Botin*, which once served as a ferry, into a "floating studio" in order to have a place where to work and explore at the same time. It had a cabin installed, to provide shelter in case of bad weather, and to sleep. He used to spend long periods on board, especially in summer accompanied by his first son, Karl. The *Botin* was replaced by a bigger and better equipped for a sailing boat, named "*Bottin*" in 1868. This "Studio boat" idea was taken Monet[40] years later.

F.26
Le bateau-atelier, Monet, 1874. oil on canvas, Private collection

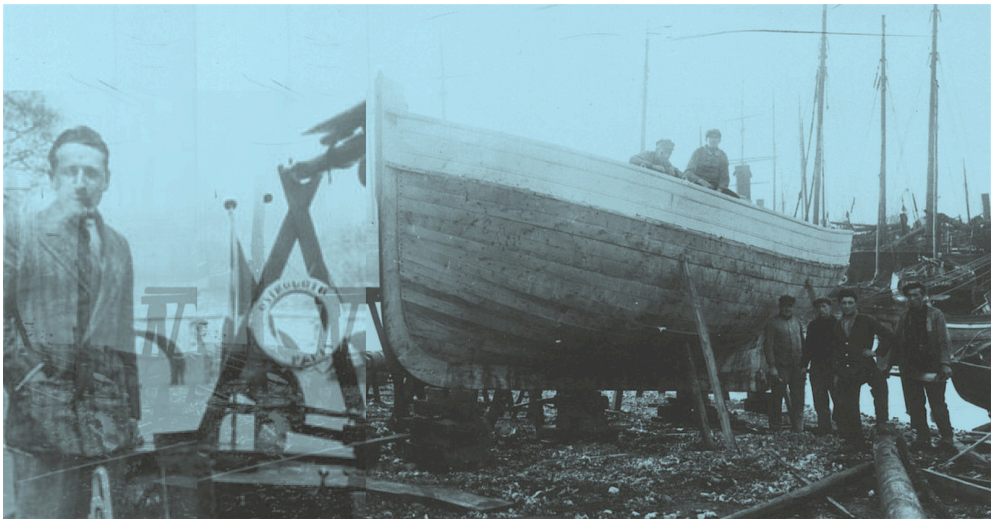
40 The two had met in London in 1870. After settling in Argenteuil, Monet bought a boat and fitted it out so that he could put his easel on it. He thus managed to capture the banks of the Seine seen from the middle of the river. In 1874 he painted "*Le bateau-atelier*".

Pretty much in the same period, Robert Louis Stevenson wrote the first draft of the Treasure Island – then published in 1883 – aboard his Parisian barge, called *Les onze mille vierges de Cologne*.

> In the summer of 1877, he was taken up again by his desire for trips and nautical expeditions. With the financial support of Sir Walter Simpson, he [Stevenson] bought a barge and had it transformed by Father Matras, Moret's carpenter, into a pleasure boat. How charming it would be to have your floating house, studio, living room, cabin, all decorated by Will Low with pink loves and tender foliage, in the style of Butcher and Fragonard! (Carré, 1929)

At the beginning of the XX century, even the future French Marshal Joseph Joffre[41] had a motorless barge fitted out as an apartment. He docked it near the Bougival lock in the *Ile-de-France* region, where he lived during and after the Great War. He set up his office on board, which he even connected by a telephone line.

In 1929, Georges Simenon[42] toured the French canals aboard his barge L'*Ostrogoth*. He then moored it on the banks of the Parisian Seine for some years.



F.27
Georges Simenon aboard the Ostrogoth

41 Joseph Jacques Césaire Joffre, (1852-1931) was the commander in chief (1914-16) of the French armies on the Western Front in World War I. He won fame as "the Victor of the Marne".

42 Georges Joseph Christian Simenon (1903-1989) was a Belgian prolific author. He published nearly 500 novels and numerous short works, but he is best known as the creator of the fictional detective Jules Maigret.

These original characters inspired the wealthy and aristocratic population of Paris. Most of them equipped their boats of all comforts. Almost all of these boats had a generator and running water, stored in tanks on the roof. Meanwhile, ashore, only a few people had this type of comfort at that time.

After World War II, it was the turn of the Americans who remained in Paris, including actor Sterling Hayden[43], to settle on the banks of the Seine.

The generation of '68 was also tempted by the non-conformism of houseboats, the "*bateaux-logements*". At the same time, architects discovered the possibility of exploiting the zenith light and creating an innovative interior design according to the spirit of the loft.

In 1975, Parisian barges created an association to defend river habitat in order to resist their expulsion, but it was only twenty years later that they obtained some recognition and status. The number of berths was regularized and new facilities favoured the installation of residential and entertainment barges along the Seine.

In the '80s and '90s, French personalities belonging to the show business as well as executives, diplomats and many others were seduced by the life on the water. The crisis of inland navigation and the soaring price of real estate had prompted many "landowners" to buy commercial barges to be converted into residential boats. This formula made it possible to have a large living space in the heart of Paris for a derisory price. Indeed, buying a barge in Paris can be more accessible than a traditional apartment, since the cost per square meter can be up to 40% lower than that of Parisian real estate, adding the "plus" of owning a spacious accommodation with a deck to watch the river and city life pass by. Moreover, according to the French Tax Code, a property tax is not due if the barge is able to navigate. The French housing tax is only sometimes claimed as compensation for municipal services (school, garbage cans...), but the administrative court is not of this opinion. For the rest, a houseboat is treated as a dwelling on the land. All these aspects explain why this phenomenon still has its charm and it is expanding even more rapidly than before in Paris as in the rest of France.

43 Sterling Walter Hayden (1916-1986) was an American actor and author. He specialized in westerns and film noir. His most famous role probably is General Jack D. Ripper, in Kubrick's Dr.Strangelove (1964). He used to define himself a sailor more than an actor, and once back in the US, he joined the houseboats community of Sausalito in California, moving in the ex- ferryboat, Berkeley, where he lived while writing his autobiography.

2.3.2 The beginning of modern houseboating in the Netherlands

In the Netherlands, a country worldwide famous for its canals and the incredible quantity of houseboats on them, choosing to live on a boat instead of a house, if not for professional sailors, is a quite recent trend.

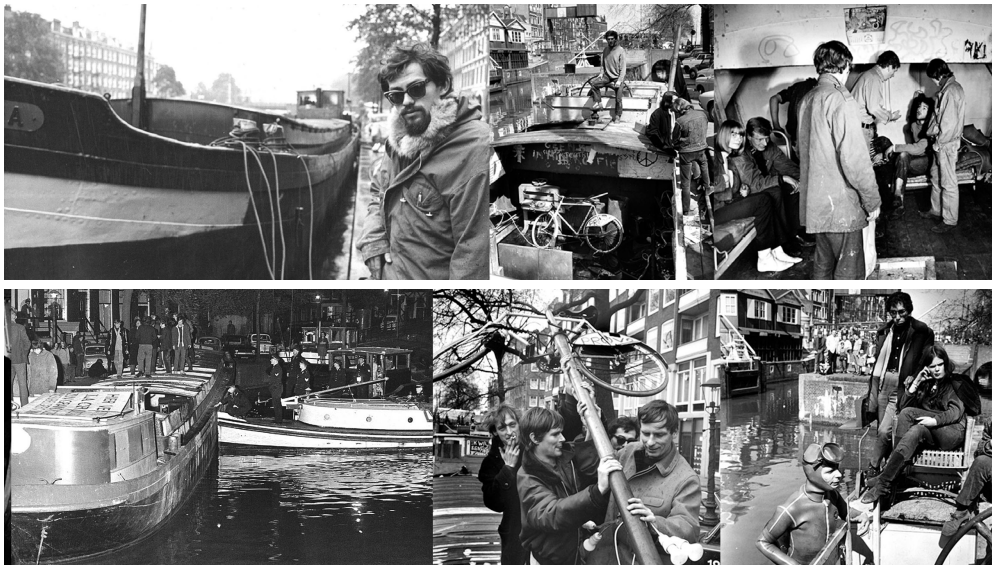
In fact, houseboating happened to be just a temporary solution to the housing shortage after War World II. The war left behind many boats and ships, too old or too damaged to be part of renovated national and private fleets. These boats were a convenient possibility for those who have lost their houses during the war, giving a 'home' to hundred of working-class families, not only in Amsterdam but also in cities crossed by canals, like Utrecht and Haarlem.

During the 1960s and the '70s, houseboating grew in popularity with the city's counterculture and the hippie movement. In fact, many were living on houseboats seeking for an alternative lifestyle and as a protest for the lack of an adequate housing offer.

> The emergence of houseboat politics in the 1960s and 1970s involved the material construction of new floating objects and, even more importantly, a shift in the social practices bringing water to life. Squatting skippers and houseboat hippies renovated barges, challenged lifestyle norms, and exploited regulatory loopholes, giving the waterscape assemblage a new political thrust. These processes loosened the canals from their industrial transportation associations, and they strengthened notions that water could instead become a self-expressive living space. This loosening effect, while lasting several decades, was temporary. (Kinder, 2015)

It is by these years that the original – often a-hundred-year-old-houseboats were nicely restored and modernised with any kind of amenities, such as electricity, heating, running water and telephone lines. Even one of the first headquarters of the Hippies movement was precisely a converted cargo ship called "De Witte Neger" and houseboating itself became a symbol of the Dutch hippie period.

> One of the original inspiration sources for the "Professor Columbus" movie must have been the provo-boat, bought by Hans Tuynman end 1966 (or was it beginning of 1967) a core figure of the Amsterdam provo movement, who had been imprisoned for two months and wrote a book on this experience and his experience as an activist in the Provo movment. […] From the money eraned with the book Hans Tuynman bought an old river freight ship which was moored near the Haarlemmerstraat in Amsterdam and soon became the new headquarters of the provo movement. […]



F.28
Pictures of the Amsterdam Provoboot "De Witte Neger"

A series of pictures of the Amsterdam Provoboot "De Witte Neger" which was mostly parked next to a lock at the Korte Prinsengracht close to the Haarlemmerstraat. The name was taken from the African art gallery of Tom Bouman "De Witte Neger" on the same spot in a cellar of one of the houses at the lock that also functioned as a rallying point for the provo movement (provokelder). There have been some hostile actions against the boat and its inhabitants with one incident whereby the ship hatches were thrown in the water. Luud Schimmelpennink who had diving equipment managed to salvage them.

> A few years later yet another hippie-boat theme movie also related to the Netherlands saw the light" "Sweet Movie" by the Yugoslav director Dusan Makavejev released in 1974, described as a "taboo-busting" and "art house" movie combining the sexual with the political. (Van Tijen, 2009)

Even if houseboating was largely appreciated by hippies, going to the 1980s, houseboating was stigmatised by the most of Amsterdam's inhabitants as a cheap and low conditions dwelling destined to poor people who seemed to be incapable of affording anything better.

> The year is 1980 and we are in the middle of Amsterdam's prime squatting years. The streets are filled with chaos and protesters are screaming 'Geen woning, geen kroning!' (No housing, no crowning!).
> The living situation in Amsterdam was in a crisis. Many people of Amsterdam needed a rooftop to live under. Like the sailors of

> Amsterdam's early years, the houseboat was a solution in a time when there was not much else to choose from.
> The status of the canal houseboat then was not quite the same as it is now. Back then it was merely a boat used for a living, since there was nothing else to choose from. It was looked down on as a poor and low way of living. (Holgersson, 2017)

However, in these few decades, some new boat dwellers started opting for a floating home instead of an old ship to restore, building houses on floating pontoons, usually not motorised, since houseboats in Amsterdam were permanently anchored to a specific address. These were luxurious fully furnished apartments with huge roof-terraces covered with flowers and plants.
The city of Amsterdam understood the value of its floating suburbs and after an initial reluctance it started investing on it. Nowadays houseboats are one of the icons of this city and of the Netherlands in general.

F.29
Example of a recent floating home along a canal of Amsterdam

> The history of houseboats in Amsterdam constituted an early phase in this multipronged, multiphased, and multisited process of water's metamorphosis. At a time when city planners hoped to replace canals and canal-fronting workshops with plazas and office buildings, new social groups actively appropriated those spaces for alternative purposes –for instance, by squatting in ware-houses and converting derelict barges into informal floating homes. Although squatters lost their hold on most central city buildings in the mid-1980s, long standing policy frames that treated water as though it were distinct from the streets and housing around it unexpectedly protected squatting skippers and houseboat hippies from municipal crackdowns, at least for a few decades. The persistence of informal houseboats domesticated the waterways and articulated a new type of romance with water-based lifestyles, both of which influenced public perception about the identity, value, and architectural character of Amsterdam water. […]
>
> Efforts to assimilate houseboats into the regulated and com-modified cityscape since the 1990s pushed the Amsterdam public to reinterpret houseboat politics yet again, this time by aesthetically distancing houseboats from their anarchist roots and financially connecting them with market-based measures of value. (Kinder, 2015)

Today there are about 2,500 houseboats only counting in the waters of Amsterdam. In Amsterdam, moorings are counted and every houseboat has a special permit called '*ligplaats*'. Obviously, a good location will increase the value of the houseboat itself. Today, there are no more permits available, and the only way to have a houseboat is to buy or rent an existing one. Recently the houseboat market has become as competitive as any other central residential area, and since the size of some houseboats is more than one-hundred square meters all on one deck, these floating units are very requested.

2.4 Contemporary boat dwellers in Europe

Amsterdam is not the only city crossed by canals and inland ports so of course, the presence of boats was something normal in industrial cities in countries that had made investments in inland waterways transports since ever. Therefore, after World War II, houseboating appeared as a temporary form of dwelling for those who had lost everything, even in cities like London and Paris.

> Royal Navy boats were quite a feature just after the war, lining the river banks and being used as houseboats. I have fond memories of them as, had they not been there, I would have run up the river banks in my sailing dinghy and got stuck on the mud; they were useful pin cushions for me in those early days.
> There have been ex-Ministry of Defence boats around the rivers at Christchurch for many years; way back in the early 1930s an old, 50ft American motor launch was said to be used by the local Sea Scouts for camping on. Going back even further, in the 1920s, there was a barge known as Derhams Tea Boat and the Delsia, another popular Tea Boat run by the Stride family up to 1940. […]
> These old boats had many uses after World War 2, because of the acute housing shortage in the town at that time, some were used for accommodation purposes (ie converted into houseboats) and others used as headquarters for local sailing clubs. (Basey, 2012)

The development of houseboating as it is known today has a lot to do with the history of inland waterways tourism.

> Interest in the leisure boating industry was ignited after the Second World War thanks to the enthusiasm of L.T.C Rolt and the IWA, living aboard a narrowboat is still growing in popularity and cargo carrying continues to be a practical use of the inland waterways. (living on a boat, pp. 7-8)

Similarly to what happened in Amsterdam and Paris, in all those places where living on a boat was socially accepted on inland working boats, in the 1960s and 70s hippies contribute to the regeneration of this practice as a dwelling possibility accessible to all. Thanks to these enthusiasts, houseboating went on to a new revival, instead of being forgotten with its canals.

F.30
Today view of Amsterdam's canals

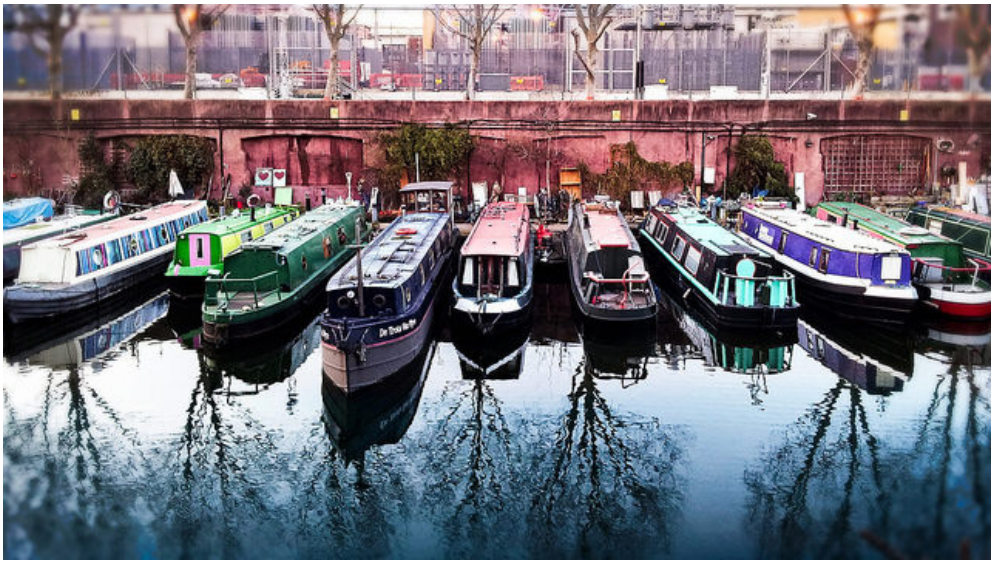
3 _ Main European Houseboat Types

Houseboats come in a variety of types and sizes, from the brightly painted narrowboats that ply the former industrial canals of England, to the modern cabin cruisers that can host from two to twelve people and are used to explore the French campaign. Other notable houseboat types are the large Dutch Klipper barge, that can be easily found laying in Amsterdam canals, or the *tjalk* (pronounced "chalk"), the popular Dutch sailing barge, which is often seen on inland waterways and lakes in the Netherlands. The French *péniche* and *Pénichettes* have broad, blunt bow and stern shapes, maximizing internal volume and they are used all over France and Belgium.
Apart from these more traditional models, many architects have designed houseboats of any kind and size and some of their projects are now standing as modern and contemporary examples of this lifestyle, attracting even those who have never been interested in yacht and navigation.
Nowadays some shipyards are specializing in the production of series-built houseboats. Most of them boast inexpensive projects for tourism. The concept is to provide one or more models of pontoons with customizable superstructures made with prefabricated materials and IKEA style furnished. Some other models are just an inland version of fibreglass yachts with less aggressive lines, in order to maximise the volume of the interiors.

Considering the most traditional kind of converted working boats, it must be said that, according to the canals on which the boats were navigating, different models took place over the centuries. In fact, narrow locks, low bridges and shallow channels needed a very specific design, that gave birth to a great variety of barges and, as it happened in the UK, narrow boats.

3.1 Narrowboats

Narrowboats belong to Britain's canal landscape and it is hard to see them on the waterways of other countries. One of the reasons is that this boat can't navigate in open waters and since the UK is an island it will be quite expensive send one of this boats somewhere else, even if someone successfully crossed the Channel[44], taking a huge risk.



F.31
Narrowboats on Regent canal

First of all, talking about liveaboard canal boats and not referring to the cargo narrow boats of the Britain Industrial Revolution, 'narrowboat' will be written as a single word, according to the recent differentiation made by British authorities, such as The Canal and River Trust.

> A narrow boat was traditionally a cargo carrying boat found on the British inland waterways from the 18th century onwards. On the UK navigable waterways locks and bridge holes are a minimum of 7 feet wide. The phrase "narrow boat" often refers to the original style of working canal boat, or a modern replica of this type of boat. […] However, the modern meaning of the term "narrow boat" in The Concise Oxford Dictionary simply reads, "A narrow boat is a canal boat, esp. one less than 7 ft. wide". The Canal and River Trust, and magazines like Waterways World have adopted the term "narrowboat" to refer to pleasure boats and liveaboard canal boats that are built with the similar style

44 Terry Darlington travelled in his narrowboat, Phyllis May, from England to France, sailing the Channel and he wrote a book about his journey called "Narrow Dog to Carcassone", published in 2006.

and dimensions to the old cargo carrying narrow boats. (Bassett and Melmoth, 2012)

According to his definition, a narrowboat is no wider than 7 feet. However, even if talking about modern replicas of today, the beam of this specific type of boats usually measure 6 feet 10 inches (1,8 m), in order to pass through locks, tunnels and every other obstacle of Britain's canal system comfortably. The maximum length for a narrowboat is about 70 feet (21.3 m), as the longest locks in the UK are only 71.6 feet (21.80 m) long. Narrowboats, mainly used to travel around, are usually around 50 feet long, as the maximum length to access the entire network is 57 feet (17.37 m). However, boats of many other lengths are possible, with a variety that goes from 20 feet to 60 feet.

As seen before, the history of the narrow boats is intertwined with the history of Britain's canal system. Narrow boats were originally built as cargo boats in the 18th, 19th, and 20th centuries on the narrow canals all around the country. Since then, the narrow boat concept has evolved to include boats used for recreation and as homes, which retain features of the original narrow boat design accompanied by more modern and comfortable interiors. This wised change of destination saved many exemplars of historical boats and their traditional decoration, through restoration, musealization and sometimes even daily use. Narrow boats are the iconic symbol of Britain's canals history and they have been the most common kind of craft on Britain's canals for at least two centuries.
According to the Canal and River Trust annual report of 2017/2018, there are more than 34,000 boats registered with a licence only in England and Wales, and the narrowboats, as it was in the past, are still dominating the canals.

The most accredited hypothesis on the origin of narrowboats wants, James Brindley, responsible for the greater and most important projects of the Britain's canal system, author of the standardisation of canal boat size. Since the second half of the18th century, his template of long and thin boats (Corble, 2010) began to be largely adopted corresponding to the criteria of many canal projects.

« The actual origins of the narrowboat are unclear, but it is possible that the hand of James Brindley can be felt in their development. […] The canal he was building for the Duke of Bridgewater had one specific purpose — to transport coal from the Duke's mines at Worsley to the growing metropolis of Manchester.
As it happened, the passageways into the Duke's mines were extremely narrow. The coal would be mined, brought out into the daylight in containers, and then transferred onto so-called 'box

> boats'. These were extremely simple in their construction, with straight oak sides and cross-planked elm bases, joined together by frames that were so pronounced that the boats became known as 'starvationers', as they looked like the ribs of a starving man.
> Long and thin, it has been suggested that these became the template for later narrowboats. The Bridgewater Canal, however, had no locks; indeed, it was in order to avoid locks that the Barton Aqueduct had been built. As such, there was nothing to stop later canals from employing different styles. Once again, this is to underestimate Brindley's influence, for his was also the hand behind the second, and greater, canal of modern times, the Trent & Mersey.
> If the Bridgewater had no locks, the Trent & Mersey had them in spades, and ever the pragmatist, Brindley would have seen the benefit of keeping to the sleek, no-nonsense style that had developed on his first great project. Slim, narrow locks would be much easier to build than large, barge-shaped ones. Furthermore, there was the little matter of a 2-mile tunnel just outside Stokeon-Trent to build, the Harecastle, where once again the benefits of narrow over broad would have been self-evident. More by default than design perhaps, but the basic dimensions of the canal boat, its length, width, and indeed height, had been decided, but not the exact style. So long as a boat could fit into this letterbox, there was room for some variation and boatyards across the country experimented with different styles, not least because they knew no better, and this was an age before 'Health and Safety' and uniformity ruled. (Corble, 2010)

Nowadays, along with Britain's canals, it is possible to see several kinds of converted narrow boats, some are original crafts restored by passionate people, while others are modern replicas, respecting the traditional exterior look being painted and decorated with Roses and Castle style. The love for these boats brought some enthusiasts to form the Historic Narrow Boat Owners Club (NBOC) in 1966. This not-for-profit club is dedicated to preserving the working heritage of the UK canals (Bassett and Melmoth, 2012).
Narrowboats may have ship prefix Nb before their names, as it is recorded in the lists of restored boats made by the NBOC.

The first narrow boats were all made of wood. Iron started to be used around 1830, but it took a while to be largely appreciated because it was more expensive. Things changed with the understanding that the boats lasted much longer, requiring easier maintenance. By a hundred years later, at the beginning of the XX century, steel was used for most of the new boats being built, although there were some still being built in wood and iron (Billingham, 1995).

> Boats continued to be made mainly of wood, although the maverick John 'Iron Mad' Wilkinson experimented with iron boats on the Severn in the early age of 'canal mania'. He was the exception, however; carpenters were easier to find than foundrymen, wood was easier to source, and wooden hulls were easier to patch. (Corble, 2010)

Wooden narrow boats are rare today many have been lost over the years, despite the passionate work of the NBOC. Nowadays narrowboats are usually built of steel, although some new ones are now made in aluminium.

> Modern narrow boats are constructed from steel plates welded together to form a very strong and resilient hull and superstructure. Old narrow boats were made of wood or wrought-iron plates. Wood and wrought iron were superseded because steel is a much easier material to work, and although it rusts, it doesn't rot away like wood, and the rivets don't wear away and drop out as they do on wrought iron. The first modern steel hulls were made from 6mm ('/ain) thick steel, but gradually the boat builders have increased the plate thicknesses so that a new boat today is quite likely to have a 10mm thick bottom, 6mm sides and a 4mm cabin. A boat made with this amount of steel should last a very long time indeed. However, many boats are still made with only a 5mm thick hull and 3mm top, particularly at the cheaper end of the market. (Billingham, 1995)

Despite the fact that most of narrowboats might look the same, there are some relevant design features to appreciate in their modern variations. In fact, narrowboats can be mainly differentiated by the shape of their stern and their bow.
As regards the stern there are Traditional, Cruiser and Semi-traditional sterns.

> The coming of diesel [introduced in 1912] occasioned another shift in basic design, as room had to be made for the engine and efficiency demanded a shorter distance between the engine and the propeller, leading to the flattened back familiar on many boats today. This in turn led to the concertinaed, Z-shape tiller. This style has become known as the 'trad', or traditional stern, and is recognisable by its small, unguarded deck. The big advantage of this style is that, in poor weather, the helmsman stands forward of the rear doors and only the upper half of his body is exposed to the elements — the lower half being warmed by the engine at the same time! In good weather, helmsmen have also been known to steer when sitting on the roof. (Corble, 2010)

F.32
The three different stern types

Traditional stern types are also known as "Trads". Narrowboats with traditionally designed sterns are obviously the closest to the original canal boats of the Industrial Revolution. The stern deck is large enough for only one person to stand to use the tiller, while the bow "welldeck" forms the main outside viewing area for the passengers. Trads are nowadays very popular for a couple of reasons – firstly because the design and lines are reminiscent of the old style working boats, but also because there is more internal secure space (Jones, 2016) than in any of the others. On the inside, trads may have an engine room forward of a traditional "boatman's cabin"[45], or an enclosed engine tucked away out of sight, increasing the living space.

F.33
A - The Traditional Stern
B -The Semi Trad Stern
C -The Cruiser Stern

The cruiser stern design, instead, was developed when leisure boating and so river cruises became a trend. In fact, this large back deck leave enough space to several people to stand on this open back deck, usually protected by a rail that runs all around it, sometimes used as a seat. The engine is usually situated below the deck, without compromising the interiors. The only bad aspect is that this layout is though for fair-weather only, as there is very little protection for the helmsman in times of rain (Corble, 2010).

Semi-trads can be described as a compromise version of the other two types. The semi-trad design has cabin side walls extending all the way back to the stern deck while leaving a section that is not covered by a roof panel. This helps to retain the appearance of a more traditional stern, whilst having enough space for socialising, like in a cruiser stern. Sometimes there may be bench seats against the sidewalls, providing a comfortable and protected area for the boater's guests. Even in this case, the engine is usually situated below the deck.

Apart from these three most-known stern design, there is another less-famous existing type of stern: the 'butty stern'. As explained previously, a butty boat is an unpowered boat traditionally towed by a narrow boat with steam or diesel engine. This kind of boats has a larger rudder with sometimes a wooden tiller as the steering does not

45 On cargo narrow boats the rear portion of the boat was left to the boatman and his family has living quarter and it was called the "boatman's cabin".

A

B

C

benefit from the force of water generated by the propeller. The tiller is usually removed and reversed in the rudder-post socket to get it out of the way when moored. Today it is possible to find butty boats converted into powered narrowboats.
As regards the bow, instead, there are mainly two kinds of design: standard or enclosed bow. A standard bow is usually around 8 feet long with a deck area of around 4.6 feet (1.4 m), which can offer seats with the double function of storage lockers on both sides. On the contrary, an enclosed bow provides around 4feet (1.2 m) extra internal space offering smart layout possibilities[46].
Another quite popular narrowboat design is the Tug. Tug-style boats are a more complicated version of the Trad boat (Billingham, 1995), with large, flat foredecks that remember old working cargo boats. Sometimes covered with traditional canvas covers secured with ropes.

F.34
A Tug

Due to the high demand of even brand new narrowboats to use as main or second habitation, some other experiments in terms of design have been allowed creating a mixture of styles. The centre cockpit narrowboats are one of these. This kind of concept, imitates some river cruisers' central cockpit, dispensing with the need for a steering deck on the stern entirely.
Another variation of the theme is the so-called mini-narrowboats. Designed for the first time in the '80es by Springer Engineering, this 20ft Water Bug is no longer produced but some exemplars are still

46 The most popular layout has the main cabin at the very front of the boat, with the bed across the full width. In this configuration the bed houses the water tank, creating a logical and practical solution.

around the canals. These boats were mostly outboard-powered with a surprising amount of internal space and a pronounced V bottom, which made them prone to rolling. They were all-steel constructed and this meant that they were heavier than glass-fibre competitors and harder for the relatively small outboard to push through water (Booth, 2010). However in the early '90es, a similar boat started to be produced by Sea Otter, but this time it was built in aluminium. As described by Graham Booth:

> It [Sea Otter] went on to build three tradable versions — 21ft, 27ft and 31ft as well as three non-trailables up to 56ft. The smaller boats can he towed by 4x4s and use canal water as ballast, releasing it as they are recovered onto the trailer. They offer a remarkable amount of internal space for their length and are powered by inboard diesel engines. (Booth, 2010)

Narrow boats' family also includes another type of narrow-beam boats that have nothing to do with the cargo carrying ones. This is the case of the inspection launches, nowadays converted into comfortable houseboats. Inspection launches were built on the lines of elegant Thames launches and they were used to carry senior canal company officials around their watery domains in comfort (Booth, 2010).

> Modern versions vary from mildly modified narrowboats to accurate, all-steel replicas. One builder followed a different track by altering Dutch barge proportions to create a narrow-beamer with narrowboat standards of accommodation and stylish, ship-like lines including all-weather wheelhouse steering. (Booth, 2010)

As regards the interiors, a standard layout typically sees a living area watching the bow, followed by the kitchen, the bathroom and finally a cabin in front of the entrance, at the stern. However, nowadays it is very common to find variations to this scheme.

> Older, more traditional boats may have a full height engine room with, possibly a traditional boatman's cabin aft of that. Longer boats may have a second bedroom or utility room inserted in the plan. Boats with a bedroom in the front and a kitchen or living space right at the back are referred to as 'reverse layout'. These are becoming more popular. Both Narrowboats […] generally have an open front deck, which can be enclosed with a removable covering called a cratch. (Bassett and Melmoth, 2012)

As it may look clear, today narrowboats are comprehensive of diverse variations of the original working narrow boats. However, even

in the past, there were several models according to the shipyard in charge of the construction, the company investing on the fleet, the canals –and the locks- they were supposed to navigate and so on. Experts can recognise those features[47] that an untrained eye won't see, being able to keep alive the history behind this floating heritage.

F.35
A tradional layout

> The original carrying companies like Fellows, Morton & Clayton, and others, built their own boats to their own designs, and they could be dramatically different. (Billingham, 1995)

As a matter of facts, there have always been different kinds of boats on these narrow canals, such as wide-beam narrowboats, barges and many other kinds of modern cruiser craft.

F.36
Narrowboat interior layout

3.1.1 Wide-beam narrowboats

Wide-beam narrowboats may sound like a paradox, but they are a sort of compromise between the "narrowboat-style" and a bigger internal space comparable with the one offered by a barge.

> Anything wider than 7 feet is known as a wide-beam or broad-beam, but can often be similar in style and design to a narrowboat. They are usually from 40ft up to 70ft. For want of a better description they are like a narrowboat only wider - 10', 10'6" and 12' are common widths […]. (Bassett and Melmoth, 2012)

47 For instance, an expert will recognise if the boat belonged to the Grand Union Canal Carrying Company (GUCCCo) or Fellows Morton & Clayton Limited (FMC), which were the two largest carrying companies at the time of the 'canal mania'. FMC boats are known as "Joshers", after Joshua Fellows, although in fact it was his father James who started the business in 1837.

F.37
On page 82 and 83.
Examples of narrowboat interiors


BRICK LANE E2

This is combination offers almost the double of the floor surface, increasing the layout possibilities for the interiors, despite the disadvantage of a limited cruising ability on Britain's canal network. However, these boats can still boast most of the good aspects of the more traditional narrow boats, such as ease handling and the ability to negotiate low bridges (Booth, 2010). Furthermore, suitably adapted wide-beam narrowboats are on record as having made Channel crossings to reach continental waterways, giving more travel options to their owners.

F.38
A wide-beam example

These boats tend to measure around 10 feet, keeping their beam narrower than regular barges, that explains why they belong to the narrowboats' family rather than the barges' one.
According to the most, the main downside of these boats it is not very 'elegant' appearance, particularly if compared to traditional old style narrowboats.

> Despite the purists' protestations these boats are becoming increasingly common as boating becomes ever more popular with the general public and particularly those who wish to live aboard. (Jones, 2016)

F.39
Wide-beam interiors' examples

3.2 Barges

First of all, if wide-beam narrow boats are still related to the narrow boat family because of their style, they differ from barges, being usually narrower. Barges are wider than narrow boats -sometimes their beam can be even more than the double- and they boast different origins and so different features and styles, explaining the need of distinguishing them into two separated categories.

> The most significant difference [between barges and narrowboats] was the width of the canals, and subsequently the size of the locks required. Early canals tended to be wider, most notably the Leeds & Liverpool, whilst the later canals, often referred to as the Midlands canals, were much narrower. This difference was reflected in the size of boats on these canals, with wider boats more efficient if the waterway could take them. It is these usually cargo-carrying boats that are most correctly referred to as 'barges', their distinguishing characteristic being a beam much greater than the 7 feet that limits the aptly named 'narrowboat', instead the size being determined by the width of the locks they had to use. In fact, barges tend to go up to 14 feet wide in order to achieve maximum efficiency. (Corble, 2010)

According to the most common definition, a barge is "a long flat-bottomed boat for carrying freight on canals and rivers, either under its own power or towed by another". Generally speaking, everybody agrees when saying that barges have always been used to move freight and carry out maintenance on inland waterways. Some canal barges are without engines and need to be towed by tugboats or pushed by towboats. However, nowadays they are one of the most common choices for those who decide to live afloat, thank their big internal space and open decks. Traditional replicas, as well as old converted barges, are today very comfortable houseboats, visible all around Europeans waterways. Since its main definition is quite vague and due to its previous use as a synonymous for 'flat-bottomed boat', it is normal that barges have nowadays a quite complex background. Despite this very general statement in his, "The Illustrated Encyclopaedia of Ships and Boats", Blackburn, clarify incongruences showing several definitions and existing kinds of 'barges'.

> BARGE: Barge probably comes from the Latin word "barca", which makes it the equivalent of BARQUE or BARK. However, today not only do BARQUE and Barge have different meanings, but Barge itself has several definitions, […].
> a. The oldest use of the word Barge was for a small seagoing ship, the next size above a BALINGER. From the 17th century on,